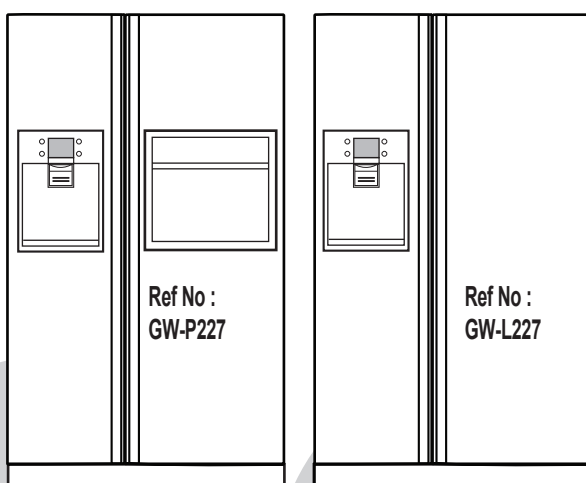


SXS REFRIGERATOR

SERVICE MANUAL

CAUTION

**PLEASE READ CAREFULLY THE SAFETY PRECAUTIONS OF THIS BOOK
BEFORE CHECKING OR OPERATING THE REFRIGERATOR.**



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WARNINGS AND PRECAUTIONS FOR SAFETY

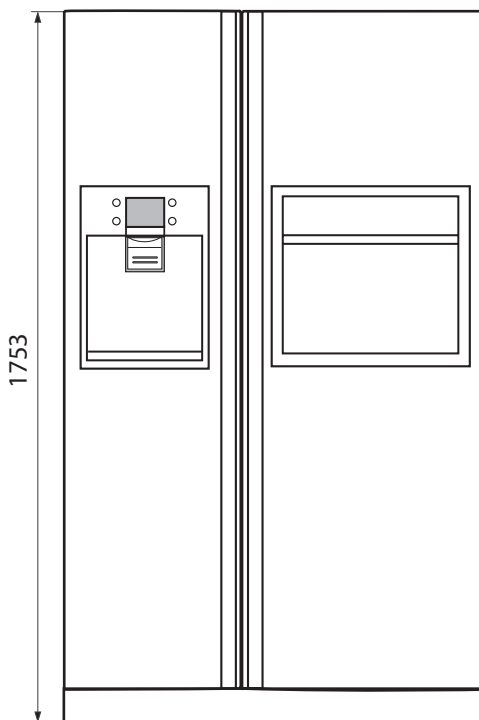
Please observe the following safety precautions in order to use safely and correctly the refrigerator and to prevent accident and danger during repair.

1. Be care of an electric shock. Disconnect power cord from wall outlet and wait for more than three minutes before replacing PWB parts. Shut off the power whenever replacing and repairing electric components.
2. When connecting power cord, please wait for more than five minutes after power cord was disconnected from the wall outlet.
3. Please check if the power plug is pressed down by the refrigerator against the wall. If the power plug was damaged, it may cause fire or electric shock.
4. If the wall outlet is over loaded, it may cause fire. Please use its own individual electrical outlet for the refrigerator.
5. Please make sure the outlet is properly earthed, particularly in wet or damp area.
6. Use standard electrical components when replacing them.
7. Make sure the hook is correctly engaged.
Remove dust and foreign materials from the housing and connecting parts.
8. Do not fray, damage, machine, heavily bend, pull out, or twist the power cord.
9. Please check the evidence of moisture intrusion in the electrical components. Replace the parts or mask it with insulation tapes if moisture intrusion was confirmed.
10. Do not touch the icemaker with hands or tools to confirm the operation of geared motor.
11. Do not let the customers repair, disassemble, and reconstruct the refrigerator for themselves. It may cause accident, electric shock, or fire.
12. Do not store flammable materials such as ether, benzene, alcohol, chemicals, gas, or medicine in the refrigerator.
13. Do not put flower vase, cup, cosmetics, chemicals, etc., or container with full of water on the top of the refrigerator.
14. Do not put glass bottles with full of water into the freezer. The contents shall freeze and break the glass bottles.
15. When you scrap the refrigerator, please disconnect the door gasket first and scrap it where children are not accessible.

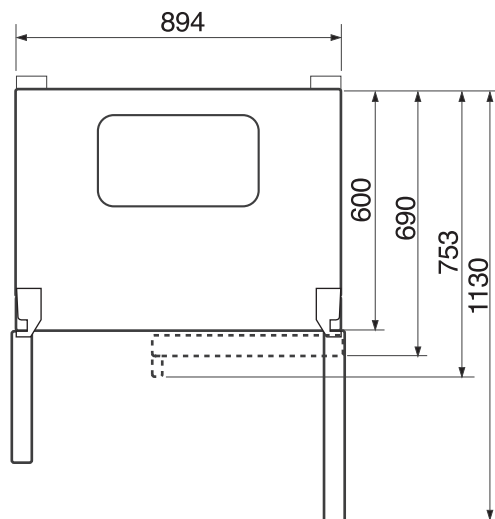
SPECIFICATIONS

1. Ref No. : GW-P227/L227/C227/B227

ITEMS	SPECIFICATIONS	ITEMS	SPECIFICATIONS
DIMENSIONS (mm)	894(W)×753(D)×1753(H)	FIRST DEFROST	4 - 5 Hours
NET WEIGHT (kg)	128(P227), 123(L227), 119(B227), 114(B227)	DEFROST CYCLE	13 - 15 Hours
COOLING SYSTEM	Fan Cooling	DEFROSTING DEVICE	Heater, Sheath
TEMPERATURE CONTROL	Micom Control	ANTI SWEAT HEATER	Dispenser Heater
DEFROSTING SYSTEM	Full Automatic		Home Bar Heater
	Heater Defrost	ANTI-FREEZING HEATER	Damper Heater
INSULATION	Cyclo-Pentane	FREEZER LAMP	40W (1 EA)
COMPRESSOR	P.T.C. Starting Type	REFRIGERATOR LAMP	40W (1 EA) or 40W (2 EA)
EVAPORATOR	Fin Tube Type	REFRIGERANT	R134a (180g)
CONDENSER	Wire Condenser		GW-P227***V R600a (78g)
DRIER	ID 0.83	LUBRICATING OIL	FREOL @ 10G (310 cc)
CAPILLARY TUBE	MOLECULAR SIEVE XH-7		GW-P227***V HTS55MT 10CST (190 cc)



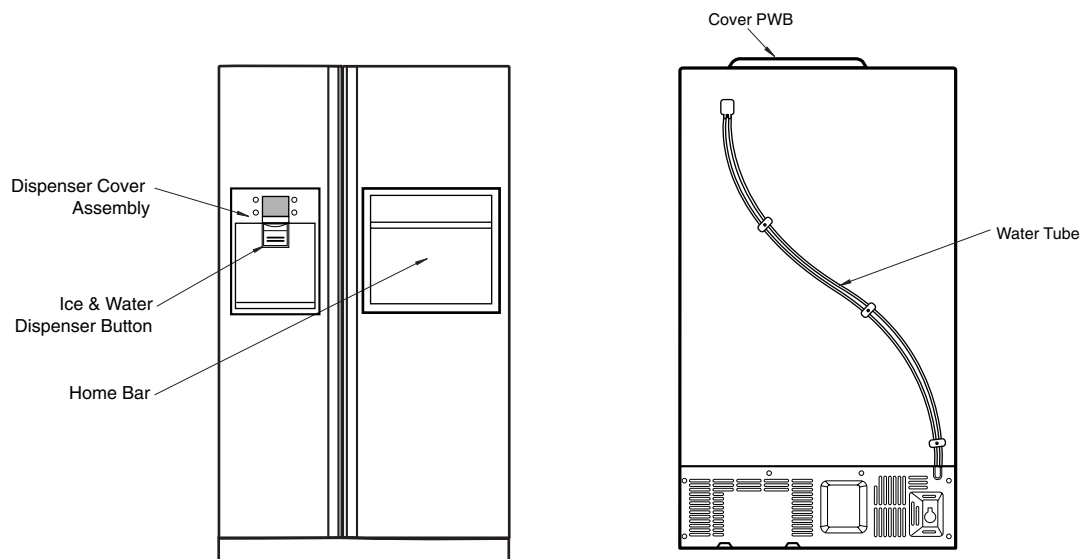
<Front View>



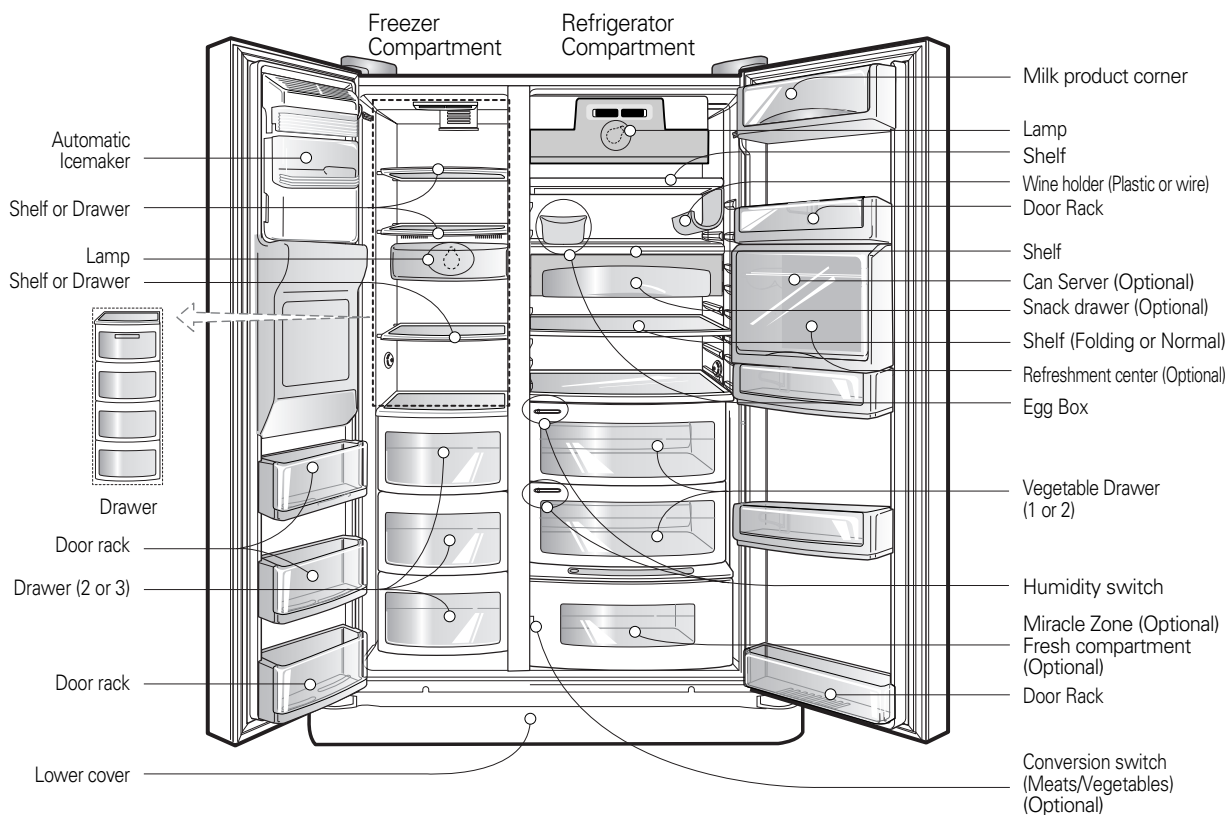
<Plane View>

PARTS IDENTIFICATION

1. Ref No. : GW-P227/L227(INTERNAL FILTER)

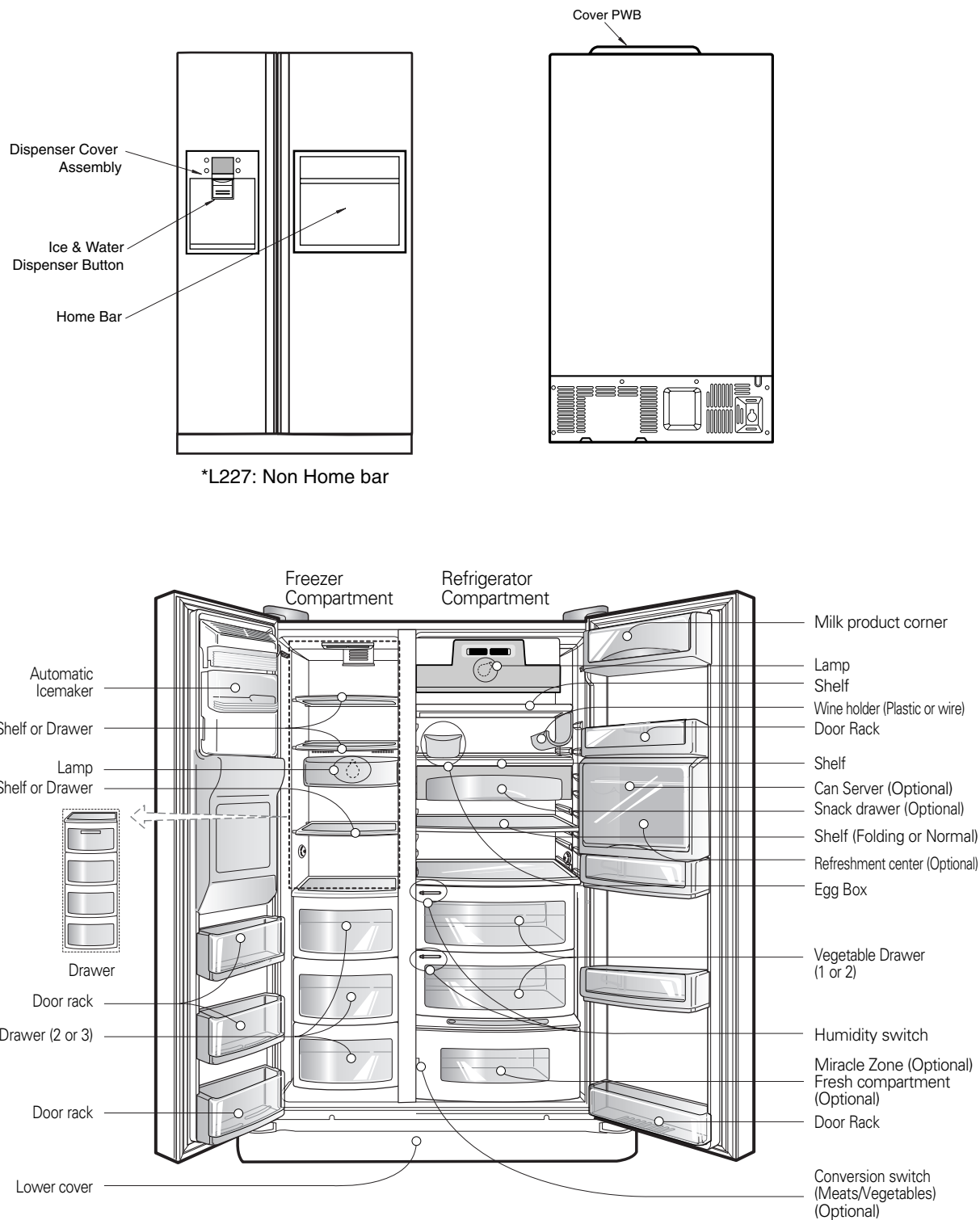


*L227: Non Home bar



PARTS IDENTIFICATION

2. Ref No. : GW-P227/L227(EXTERNAL FILTER)



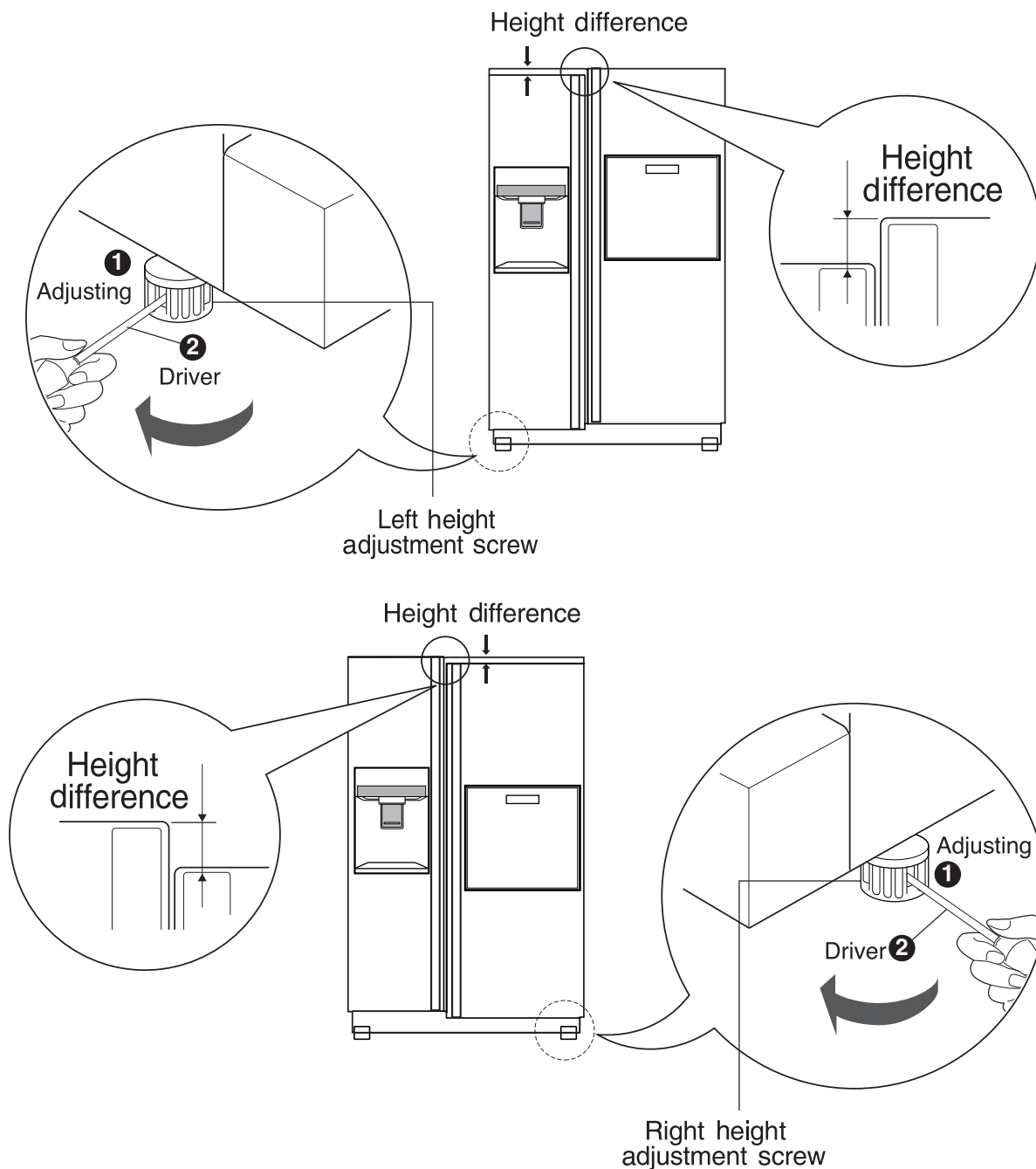
HOW TO INSTALL REFRIGERATOR

1. How to Adjust Door Height of Refrigerator

■ Make the refrigerator level first. (If the refrigerator is not installed on the flat floor, the height of freezer and refrigerator door may not be the same.)

1. If the height of freezer door is lower than that of refrigerator compartment :

2. If the height of freezer door is higher than that of refrigerator compartment :



Insert a driver ② into the groove ① of adjusting screw and rotate driver in arrow direction (clockwise) until the refrigerator becomes horizontal.

Insert a driver ② into the groove ① of adjusting screw and rotate driver in arrow direction (clockwise) until the refrigerator becomes horizontal.

HOW TO INSTALL REFRIGERATOR

2. Connection to Main Water Supply

■ Before Installation

1. The icemaker requires the water pressure of 1.5 - 8.5kgf/cm². (It is acceptable if city water fills a cup of 180cc with water for 3 seconds)
2. Install booster pump where the city water pressure is below 1.5kgf/cm² for normal operation of water and ice dispenser.
3. The total length of water pipe shall be less than 12m. Do not bend the pipe at right angle. If the length is more than 12m, there will be troubles on water supply due to water pressure drop.
4. Please install water pipe where there is no heat around.

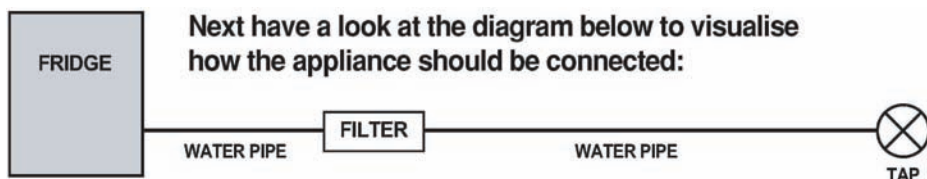
2-1. Check all correct items (In case of External Filter Models).



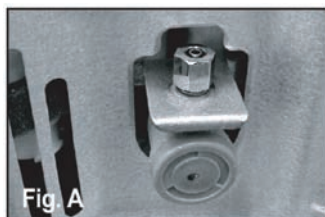
- 1 x Connector type Water Filter
- 2 x Clips
- 1 x 8mm Water Pipe



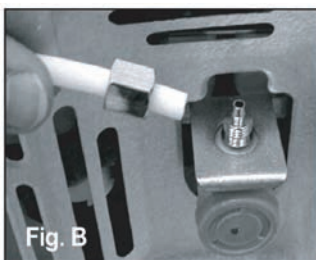
- Plastic Pipe Connector
- Rubber Washer



2-2. Connection to the Appliance (In case of External or Internal Filter Models).



- At the back of the appliance you will see the water inlet valve. (See Fig. A)



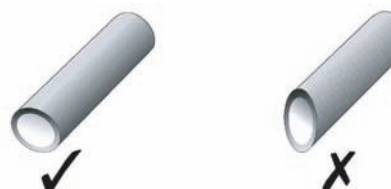
- Unscrew the metal threaded collar and place it over one end of the water pipe. (See Fig. B)



- Firmly push the water pipe onto the water inlet valve and tighten up the metal collar. (See Fig. C)

- You now need to cut the water pipe to the right length for connection of the water filter. It is suggested that **approximately 1.5m of pipe is used** - this should allow the filter to be located in an accessible position (for periodic replacement) and also allow some slack in the pipe behind the machine so that it can be pulled out for cleaning or servicing purposes.

You must also ensure that the cut is square and not at any sort of angle as this could cause a leak.



HOW TO INSTALL REFRIGERATOR

2-3. Connection of Water Filter (In case of External Filter Models).

Now you have cut the pipe from the back of the appliance to length. It needs to be attached to the water filter. The filter is marked with the direction of the water flow (i.e. from tap to fridge).

Remember however that the connection is being done from the refrigerator to the tap (i.e. the reverse of the water flow when in use).



Fig. E



Fig. F

- Just insert tube into the end of the filter that the flow arrow points until the tube stop. (See Fig. E)
- After inserting tube, put together the clip strongly. The clip fix the tube. (See Fig. F)

Note the direction markings on the filter!



Fig. H



Fig. I

- Repeat on the other end of the filter using the remainder of the water pipe. (See Fig. H)
- If you have connector type filter, put together the clip strongly. The clip fix the tube. (See Fig. I)

2-4. Connection to the Water Tap (In case of External and Internal Filter Models).

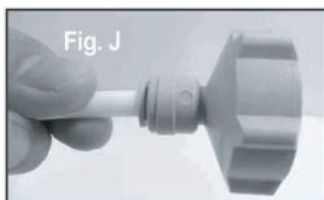
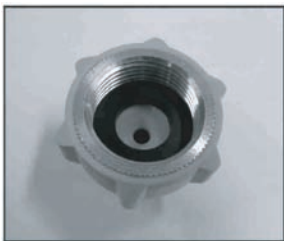


Fig. J

- Cut the pipe that is connected to the water filter to the correct length. Again, make sure that the cut is nice and square to avoid leaks.
- Push the pipe into the smaller hole of the connector supplied in the plumbing adapter kit. The pipe should be held firm. (See Fig. J)

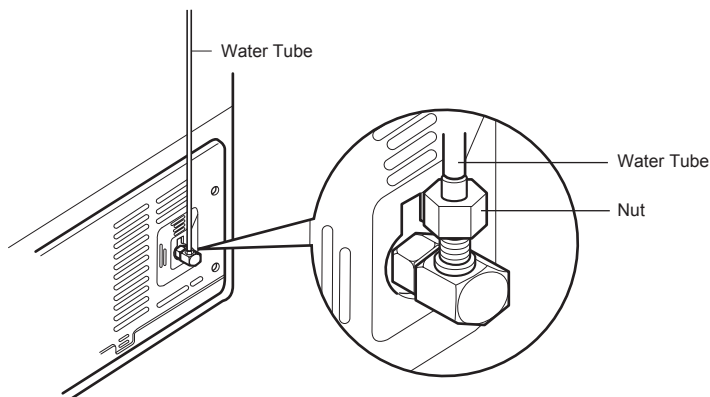


- Place the rubber washer inside the threaded tap connector and screw onto water tap.

CAUTION: feed pipe should be connected to cold water line. If it's connected to hot water line, trouble may occur.

2-5. Water Supply

- 1) After the installation of feed water, plug the refrigerator to the earthed wall outlet, press the water dispenser button for 2 - 3 minutes, and confirm that the water comes out.
- 2) Check leakage at connecting part, then arrange water tube and locate the refrigerator at its regular place if there is no leaking.



HOW TO INSTALL REFRIGERATOR

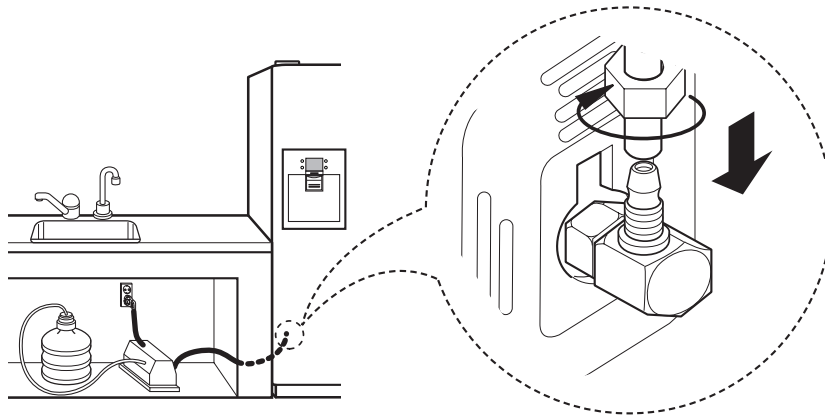
3. When customer uses bottled water.

*If customer wants to use bottled water, extra pump should be installed as shown below.

1. The pump system should not be on the floor (it may cause noise and vibration). Securely fasten the inlet and outlet nuts of pump.
2. If there is any leakage after installation, cut the water tube at right angle and reassemble.
3. When put the water tube end into the bottle, leave a clearance between bottle bottom and water tube end.
- 4 Check water coming out and any leakage.

Caution :

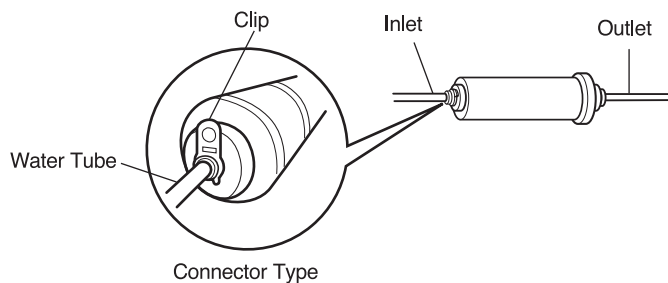
- If feed tube is more than 4m, less water will come out due to pressure drops.
- Use standard feed tube to prevent leaking.



■ Outtternal Filter

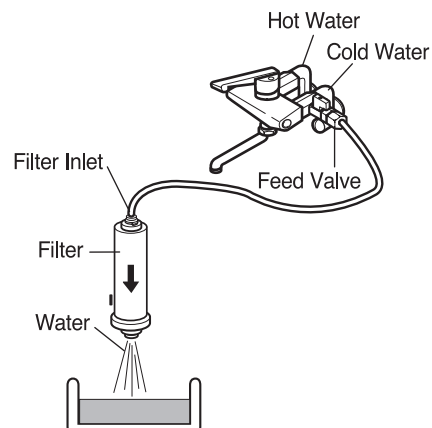
1. Filter Fixation

- 1) Connect feed tube to the filter outlet and water valve connecting tube.
- 2) Fix the filter at proper place around the sink where it is easy to replace the filter and to receive the cleaning water.
Please consider the length of tube shall be less than 8m when locating filter.



2. Filter Cleaning

- 1) Connect feed tube to the inlet of feed valve and filter.
- 2) Clean the main valve and feed valve with water for at least one minute until clean water comes out.

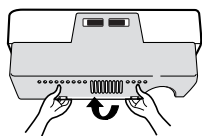
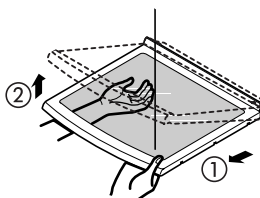


HOW TO INSTALL REFRIGERATOR

■ Install Water Filter (Applicable to some models only)

■ Before Installing water filter

1. Before installing the filter, take out the top shelf of the refrigerator after tilting it to the direction (①) and lifting it to the direction (②) and move it to the lower part.
2. Remove the lamp cover by pressing the protrusion under the cover and pulling the cover to the front.



■ Installing water filter

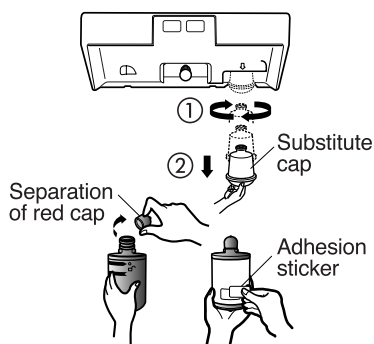
1. Initial installation of water filter

Remove the filter substitute cap by turning it counterclockwise (①) by 90 degrees and pulling it down.

Note : Keep it safe to use it later when you do not use the filter.

Remove the red cap from the filter and attach the sticker. Insert the upper part of the filter (①) after aligning with the guideline marked on the control box, and fasten it by turning it clockwise by 90 degrees.

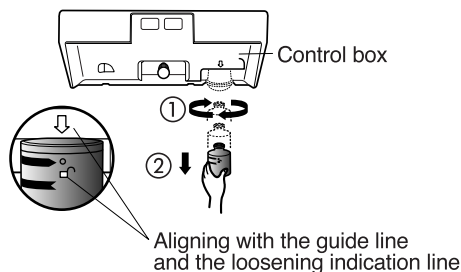
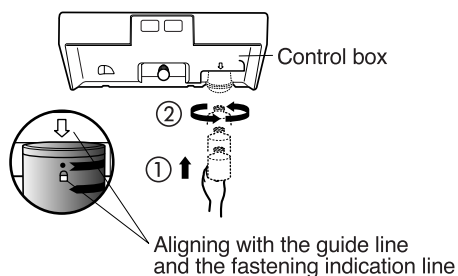
Note : Check that the guideline and the fastening indication line are aligned.



2. Replacement of water filter

While holding the lower part of the filter, turn it counterclockwise (①) by 90 degrees and pull it down.

Note : Check that the guideline and the loosening indication line are aligned.

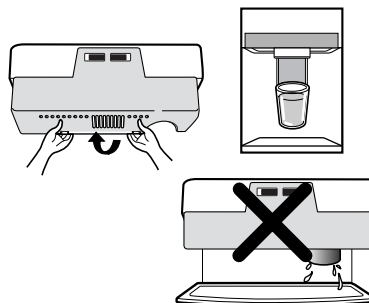


■ After installing water filter

Reassemble the lamp cover and the top shelf of the refrigerator. To place the top shelf of the refrigerator, raise the front part of the shelf a bit so that the hook of the shelf is fit into the groove.

In order to clean the water filter system, drain water for about 3 min.

Note : Then open the door of the refrigerator and check for water droppings on the shelf under the filter.



HOW TO INSTALL REFRIGERATOR

3. How to Control the Amount of Water Supplied to Icemaker.

3-1. Confirm the amount of water supplied to the icemaker.

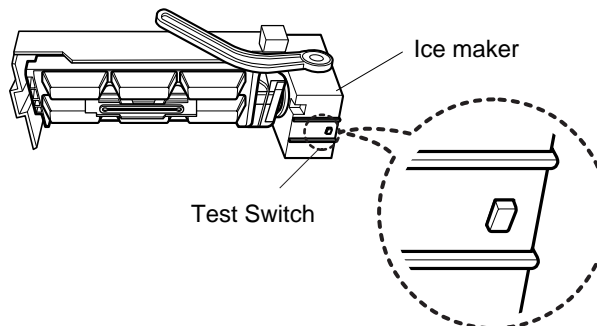
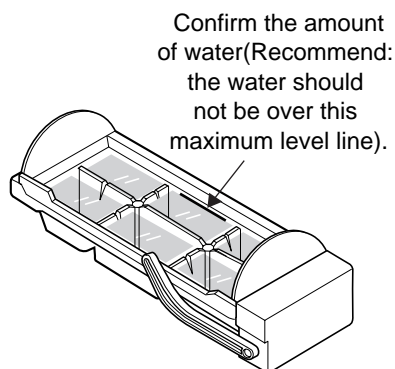
1. Remove the cover bucket : Lift the cover with a slight twisting.
2. Remove the ice bucket : Lift the lower part slightly and take the ice bucket out slowly.



- **Caution :** • Do not put your hands or tools into the chute to confirm the operation of geared motor. It may damage refrigerator or hurt your hands.
- Check the operation of motor with its operation noise.

3. Apply electricity after connecting water pipe.

- 1) Press test switch under the icemaker for two seconds as shown below.
- 2) The bell rings(ding~dong) and ice tray rotates and water comes out from the icemaker water tube.
- 3) The water shall be supplied two or three times into the tray. The amount of water supplied for each time is small.
Put a water container under the ice tray and press test switch.
- 4) When ice tray rotates, the water in it will spill. Collect the spilt water and throw away into the sink.
- 5) When ice tray has finished rotation, water comes out from the water tube. Confirm the amounts of water in the ice tray.
(refer to fig. The optimum amount of water is 80cc)



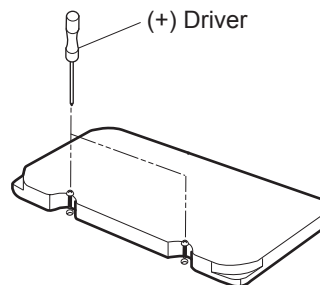
* It is acceptable if the adjusted level of water is a bit smaller than maximum level.

HOW TO INSTALL REFRIGERATOR

3-2. Control the amount of water supplied to the icemaker.

Caution : • Please unplug the power cord from the wall outlet and wait for more than three minutes before disconnecting PCB cover as 310V is applied in the control panel.

1. Disconnect PCB cover from the upper part of the refrigerator.
2. Adjust the amount of water supplied by using DIP switch.



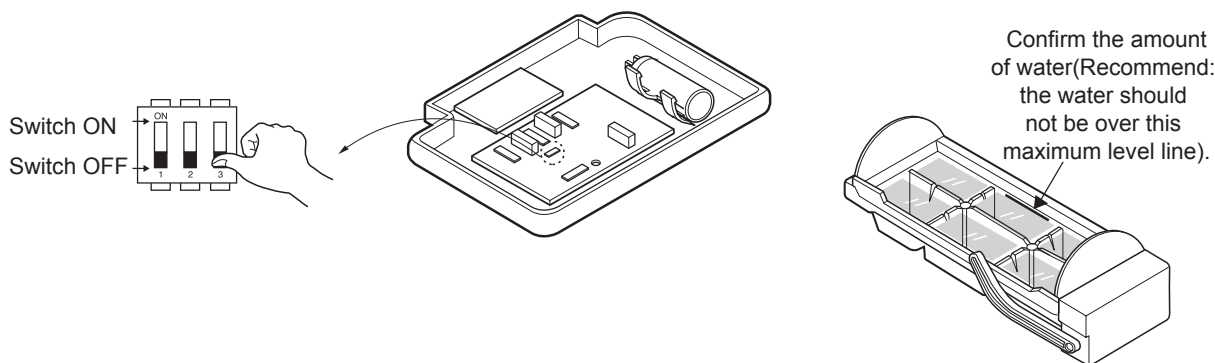
■ Water Supplying Time Control Option

No	DIP SWITCH SETTING			WATER SUPPLY TIME	REMARKS
	S1	S2	S3		
1	OFF	OFF	OFF	6.5 SEC	* The quantity of water supplied depends on DIP switch setting conditions and water pressure as it is a direct tap water connection type. (the water supplied is generally 60 cc to 100 cc) * DIP switch is on the main PCB.
2	ON	OFF	OFF	5.5 SEC	
3	OFF	ON	OFF	6 SEC	
4	ON	ON	OFF	7 SEC	
5	OFF	OFF	ON	7.5 SEC	
6	ON	OFF	ON	8 SEC	
7	OFF	ON	ON	9 SEC	
8	ON	ON	ON	10 SEC	

- 1) The water supplying time is set at 4.5 seconds when the refrigerator is delivered.
- 2) The amount of water supplied depends on the setting time and water pressure (city water pressure).
- 3) If ice cube is too small, increase the water supplying time. This happens when too small water is supplied into the ice tray.
- 4) If ice cube sticks together, decrease the water supplying time. This happens when too much water is supplied into the ice tray.

Caution : When adjusting the amount of water supplied, adjust step by step. Otherwise the water may spill over.

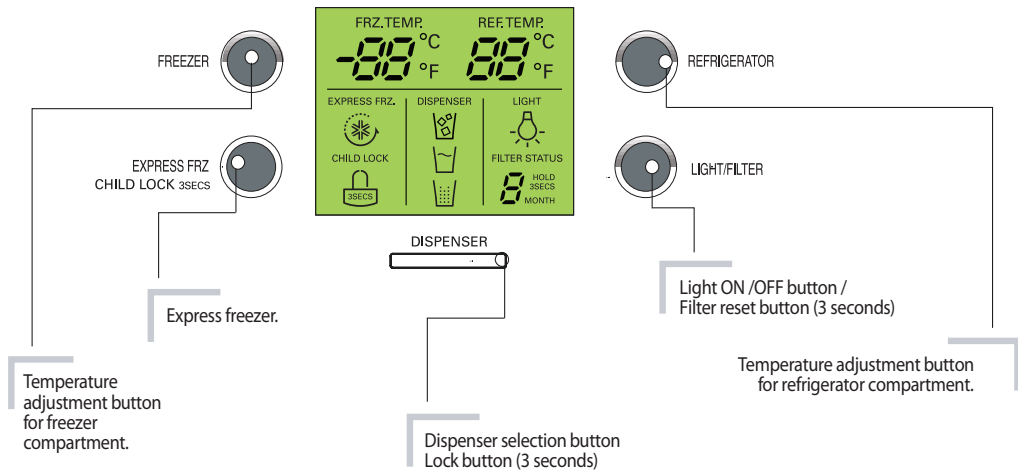
3. When adjustment of control switch for the amount of water supplied is complete, check the level of water in the ice tray.



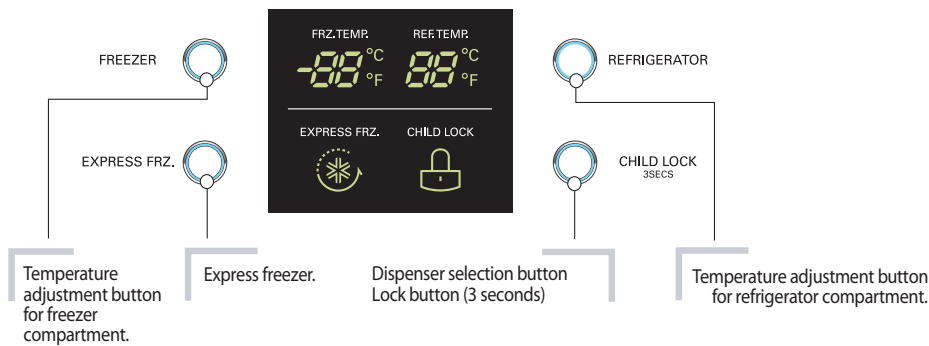
MICOM FUNCTION

1. Monitor Panel

1-1. LCD88



1-2. LED88



MICOM FUNCTION

1-3. Display Second Function

1. Buzzer sound mute Mode

The buzzer sound is set to OFF.

It activates by sounding the recognition sound of “Ding~” after pressing and holding “Express FRZ” button more than 5 seconds. It inactivates when resetting the mode power.

2. Display Power saving Mode

It places display in standby mode until door is opened.

Press “Freezer” and “Express FRZ” buttons simultaneously to turn all leds become ON and then OFF with the recognition sound of “Ding~” after 5 seconds. (Be sure not to press only one button to work.)

Once the mode activates, the display is always OFF. Until door is opened or display button is pressed. When 30 seconds has elapsed after closing door or pressing button, the display turns OFF. To deactivate this mode is same as the activation methods. The mode inactivates when resetting the power.

3. Exhibition Mode

This function is available when exhibiting a refrigerator in the shopping mall.

Function is inserted with recognition sound “Ding ~” if opening the refrigerator or freezer door and pressing both the “Express FRZ” button and the “REFRIGERATOR” button at the same time for more than 5 seconds. If function is inserted, all basic refreezing functions at the R/F room and the Storage room (COMP, F-FAN, C-FAN) turns off and the display normally operates. However, the dispenser function normally operates.

The DEMO stops if pressing the button during DISPLAY DEMO, DEMO stops and the display normally operates but performs DEMO operation again if not pressing the button again for more than 30 seconds (DEMO: Display scenario when using the display).

Release method is same as input method.

The mode is released if power is reset.

MICOM FUNCTION

2. Description of Function

2-1. Function of Temperature Selection

< 88-LED >

Division		Power Initially On	1st Press	2nd Press	3rd Press	4th Press	5th Press	6th Press	7th Press	8th Press
Change of Indication Lamp	Type-1 (88-LED)	-15 °C 3 °C	-20 °C 2 °C	-21 °C 1 °C	-22 °C 0 °C	-23 °C 6 °C	-15 °C 5 °C	-16 °C 4 °C	-17 °C 3 °C	-18 °C 2 °C
Freezer Control		-19 °C	-20 °C	-21 °C	-22 °C	-23 °C	-15 °C	-16 °C	-17 °C	-18 °C
Refrigeration Control		3 °C	2 °C	1 °C	0 °C	6 °C	5 °C	4 °C	3 °C (Power Initially ON)	2 °C (1 st Press)

* The temperature can vary ± 3 °C depending on the load condition.

*() : P227, L227

*< > : C227, B227

1. When power is initially applied or reapplied after power cut, "Medium" is automatically selected.
2. When the temperature selection switch in the freezer and refrigerator compartments is pressed, the light is on in the following sequence:

< 88 - LED >

F Power Initially On → 1st Press → 2nd Press → 3rd Press → 4th Press → 5th Press → 6th Press → 7th Press → 8th Press

R Power Initially On → 1st Press → 2nd Press → 3rd Press → 4th Press → 5th Press → 6th Press

MICOM FUNCTION

2-2. Automatic ice maker

- The automatic ice maker can automatically make 6 pieces of ice cube at a time, 50~60 pieces a day. But these quantities may be varied according to various conditions including how many times the refrigerator door opens and closes.
- Ice making stops when the ice storage bin is full.
- If you don't want to use automatic ice-maker, change the ice-maker switch to ON-OFF.
If you want to use automatic ice-maker again, change the switch to OFF-ON.

NOTE : It is normal that a noise is produced when ice made is dropped into the ice storage bin.

2-3. When ice maker does not operate smoothly

Ice is lumped together

- When ice is lumped together, take the ice lumps out of the ice storage bin, break them into small pieces, and then place them into the ice storage bin again.
- When the ice maker produces too small or lumped together ice, the amount of water supplied to the ice maker need to be adjusted. Contact the service center.
- * If ice is not used frequently, it may lump together.

Power failure

- Ice may drop into the freezer compartment. Take the ice storage bin out and discard all the ice then dry it and place it back. After the machine is powered again, crushed ice will be automatically selected.

The unit is newly installed

- It takes about 12 hours for a newly installed refrigerator to make ice in the freezer compartment.

2-4. Express freezing

1. Express freezing is function to improve cooling speed of the freezing room by consecutively operating compressors and freezing room fan.
2. Express freezing is released if power failure occurs and then returns to the original status.
3. Temperature setting is not changed even if selecting the express freezing.
4. The change of temperature setting at the freezing room or the cold storage room is allowed with express freezing selected and processed.
5. The cold storage room operates the status currently set with Express freezing selected and processed.
6. If selecting the Express freezing, the Express freezing function is released after continuously operating compressor and freezing room fan.
7. If frost removal starting time is arrived during Express freezing, Express freezing operation is done only for the remaining time after completion of frost removal when the Express freezing operation time passes 90 minutes. If passing 90 minutes, Express freezing operation is done only for 2 hours after completion of frost removal.
8. If pressing Express freezing button during frost removal, the Express freezing LED is turned on but if pressing the Express freezing, compressor operates after the remaining time has passed.
9. If selection Express freezing within 7 minutes (delay for 7 minutes of compressor) after the compressor stops, compressor operates after the remaining time has passed.
10. The freezing room fan motor operates at the high speed of RPM during operation of Express freezing.

MICOM FUNCTION

2-5. Control of variable type of freezing room fan

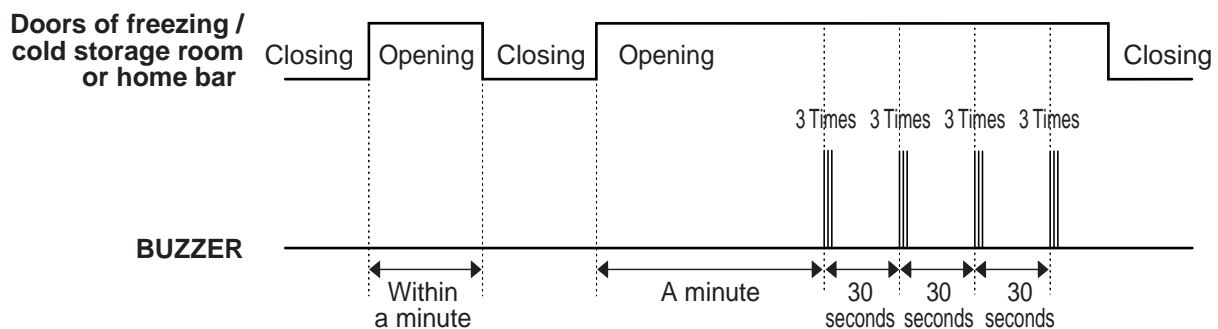
1. To increase cooling speed and load response speed, MICOM variably controls freezing room fan motor at the high speed of RPM and standard RPM.
2. MICOM only operates in the input of initial power or special freezing operation or load response operation for the high speed of RPM and operates in the standard RPM in other general operation.
3. If opening doors of freezing / cold storage room or home bar while fan motor in the freezing room operates, the freezing room fan motor normally operates (If being operated in the high speed of RPM, it converts operation to the standard RPM). However, if opening doors of freezing room or home bar, the freezing room fan motor stops.
4. As for monitoring of BLDC fan motor error in the freezing room, MICOM immediately stops the fan motor by determining that the BLDC fan motor is locked or poor if there would be position signal for more than 65 seconds at the BLDC motor. Then it displays failure (refer to failure diagnosis function table) at the display part of refrigerator, performs re-operation in the cycle of 30 minutes. If normal operation is performed, poor status is released and refrigerator returns to the initial status (reset).

2-6. Control of M/C room fan motor

1. The M/C room fan motor performs ON/OFF control by linking with the COMP.
2. It controls at the single RPM without varying RPM.
3. Failure sensing method is same as in fan motor of freezing fan motor (refer to failure diagnosis function table for failure display).

2-7. Door opening alarm

1. Buzzer generates alarm sound if doors are not closed even when more than a minute consecutively has passed with doors of freezing / cold storage room or home bar opened.
2. Buzzer rings three times in the interval of 0.5 second after the first one-minute has passed after doors are opened and then repeats three times of On/Off alarm in the cycle of every 30 seconds.
3. If all the doors of freezing / cold storage room or home bar are closed during door open alarm, alarm is immediately released.



2-8. Ringing of button selection buzzer

1. If pressing the front display button, "Ding ~ " sound rings.

2-9. Ringing of compulsory operation, compulsory frost removal buzzer

1. If pressing the test button in the main PCB, "Phi ~ " sound rings.
2. In selecting compulsory operation, alarm sound is repeated and completed in the cycle of On for 0.2 second and Off for 1.8 second three times.
3. In selecting compulsory frost removal, alarm sound is repeated and completed in the cycle of On for 0.2 second , Off for 0.2 second, On for 0.2 second and Off for 1.4 second three times.

MICOM FUNCTION

2-10. Frost removal function

1. Frost removal is performed whenever total operation time of compressor becomes 7 ~ 7.5 hour.
2. In providing initial power (or returning power failure), frost removal starts whenever total operation time of compressor becomes 4 ~ 4.5 hour.
3. Frost removal is completed if temperature of a frost removal sensor becomes more than 5°C after starting frost removal.
Poor frost removal is not displaced if it does not arrive at 5°C even if two hours have passed after starting frost removal.
4. No removal is done if frost removal sensor becomes poor (snapping or short-circuit).

2-11. Sequential operation of built-in product

Built-in products such as compressor, frost removal heater, freezing room fan, Cooling Fan and step motor damper are sequentially operated as follows for preventing noise and part damage occurred due to simultaneous operation of a lot of parts in applying initial power and completing test.

Function	Load Operation Sequence	Remark
In applying Initial power	<p>When temperature of a frost removal sensor becomes more than 45°C (In purchase, movement)</p> <pre> graph LR POWER[POWER ON] -- 0.3 sec. --> COMP[COMP ON] COMP -- 0.3 sec. --> FAN[F-FAN & C-FAN ON] FAN -- 0.3 sec. --> DAMPER[R-STEP MOTOR DAMPER ON] DAMPER -- 0.3 sec. --> MIRACLE[MIRACLE ZONE STEP DAMPER MOTOR ON] MIRACLE -- 0.3 sec. --> HEATER[HOME BAR HEATER ON] </pre>	<p>If error occurs during operation, initial operation is not done.</p> <p>■ Sequence of load operation when closing F-room and R-room.</p>
	<p>When temperature of a frost removal sensor becomes less than 45°C (In power failure, service)</p> <pre> graph LR POWER[POWER ON] -- 0.3 sec. --> FROST[FROST REMOVAL HEATER ON] FROST -- 6 sec. --> FROST_OFF[FROST REMOVAL HEATER OFF] FROST_OFF -- 0.3 sec. --> HEAT[HOME BAR HEATER ON] HEAT -- 5 sec. --> HEAT_OFF[HOME BAR HEATER OFF] HEAT_OFF -- 0.3 sec. --> DAMPER[DAMPER & DUCT DOOR HEATER ON] DAMPER -- 5 sec. --> DAMPER_OFF[DAMPER & DUCT DOOR HEATER OFF] DAMPER_OFF -- 0.3 sec. --> PIPE[PIPE & DISP' HEATER ON] PIPE -- 0.3 sec. --> PIPE_OFF[PIPE & DISP' HEATER OFF] PIPE_OFF -- 5 sec. --> COMP[COMP ON] COMP -- 0.3 sec. --> FAN[F-FAN & C-FAN ON] FAN -- 0.3 sec. --> DAMPER[R-STEP MOTOR DAMPER ON] DAMPER -- 0.3 sec. --> MIRACLE[MIRACLE ZONE STEP DAMPER MOTOR ON] MIRACLE -- 0.3 sec. --> HEATER[HOME BAR HEATER ON] </pre>	
TEST MODE	<p>Test mode 1 (Compulsory function)</p> <pre> graph LR TEST[Test S/W (PRESS Once)] --> OTHER[OTHER LOAD OFF] OTHER -- 0.3 sec. --> COMP[COMP ON] COMP -- 0.3 sec. --> FAN[F-FAN & C-FAN ON] FAN -- 0.3 sec. --> DAMPER[R-STEP MOTOR DAMPER ON] DAMPER -- 0.3 sec. --> MIRACLE[MIRACLE ZONE STEP DAMPER MOTOR CLOSE] </pre>	<p>If pressing switch once more in the test mode 2 or temperature of a frost removal sensor is more than 5°C, it immediately returns to the test mode for initial operation (COMP operates after 7 minutes).</p>
	<p>Test mode 2 (Compulsory frost removal)</p> <pre> graph LR TEST[Test S/W (PRESS 2 Times)] --> COMP[COMP OFF] COMP -- 0.3 sec. --> FAN[F-FAN & C-FAN OFF] FAN -- 0.3 sec. --> FROST[FROST REMOVAL HEATER ON] FROST -- 0.3 sec. --> DAMPER[R-STEP MOTOR DAMPER CLOSE] </pre>	

MICOM Error Code

1-1. Error Code Summary



When you check the Resistance values, be sure to turn off the power.
And wait for the voltage-discharge sufficiently.

MICOM FAILURE DIAGNOSIS TABLE

CAUTION 1) DEFECT FAILURE CODE IS INDICATED ON THE DISPLAY PART OF SETUP TEMPERATURE FOR THE COLD STORAGE ROOM AND OF SETUP TEMPERATURE FOR THE FREEZING ROOM, AND THE OTHER DISPLAY PART IS TURNED OFF.
2) MAKE A PROPER OPERATION THROUGH REAPPLICATION AFTER ALWAYS TURNING OFF POWER WHEN DIAGNOSING FAILURE AND FINISHING TEST MODE.

(1) FAILURE DIAGNOSIS FUNCTION

BASIC	DELUXE
<p>FAILURE CODE INDICATION PART</p>	<p>FAILURE CODE INDICATION PART</p>

○ : PROPER OPERATION

NO	ITEM	FAILURE CODE INDICATION PART		CONTENTS OF FAILURE	PRODUCT OPERATION STATUS IN FAILURE				
		FREEZER ROOM NOTCH TEMPERATURE DISPLAY	REFRIGERATOR ROOM NOTCH TEMPERATURE DISPLAY		COMPRESSOR	FREEZING BLDC MOTOR	COOLING BLDC MOTOR	DEFROST HEATER	STEPPING MOTOR DAMPER
1	ABNORMAL FREEZER SENSOR	Er	FS	FREEZER SENSOR SHORT CIRCUIT	ON FOR 15 MINUTES / OFF FOR 15 MINUTES	STANDARD RPM	○	○	○
2	ABNORMAL REFRIGERATOR SENSOR1(R1) (UPPER PART IN THE REFRIGERATOR COMPARTMENT)	Er	rS	REFRIGERATOR SENSOR1 SHORT CIRCUIT	○	STANDARD RPM	○	○	FULL OPENING FOR 10 MINUTES / FULL CLOSING FOR 15 MINUTES
3	ABNORMAL REFRIGERATOR SENSOR2(R2) (LOWER PART IN THE REFRIGERATOR COMPARTMENT)	*Er	r2	REFRIGERATOR SENSOR2 SHORT CIRCUIT	○	STANDARD RPM	○	○	○
4	ABNORMAL DEFROST SENSOR	Er	dS	ABNORMAL SHORT CIRCUIT	○	STANDARD RPM	○	NO DEFROST	○
5	FAILED DEFROSTING	Er	dH	DEFROST HEATER, TEMPERATURE FUSE SHORT CIRCUIT, UNPLUGGED CONNECTOR (INDICATED 4 HOUR LATER AFTER TROUBLE)	○	STANDARD RPM	○	○	○
6	ABNORMAL FREEZING BLDC MOTOR	Er	FF	MOTOR DEFECT, HOOKED OF LEAD WIRE TO FAN, CONTACT OF STRUCTURES WITH FAN, SHORT OR OPEN OF LEAD WIRE (THERE IS NO SIGNAL OF BLDC MOTOR MORE THAN 65 SECONDS IN OPERATION OF FAN MOTOR)	○	OFF	○	○	○
7	ABNORMAL COOLING BLDC MOTOR	Er	CF		○	STANDARD RPM	OFF	○	○
8	ABNORMAL COMMUNICATION	Er	CO	SHORT OR OPEN OF LEAD WIRE CONNECTING BETWEEN MAIN PCB AND DISPLAY PCB, TRANSMISSION TR AND RECEIVING PART	○	STANDARD RPM	○	○	○
9	ABNORMAL AMBIENT SENSOR	*Er	rt	AMBIENT SENSOR SHORT CIRCUIT	○	○	○	○	○
10	ABNORMAL ICE-MAKER SENSOR	*Er	IS	ICE-MAKER SENSOR SHORT CIRCUIT	○	○	○	○	○
11	ABNORMAL ICE-MAKER UNIT	*Er	It	FAULTY ICE-MAKER UNIT MOTOR OR HALL IC, LEAD WIRE SHORT CIRCUIT, FAULTY MOTOR DRIVING CIRCUIT	○	○	○	○	○
12	ABNORMAL WATERTANK SENSOR ABNORMAL MAGICROOM SENSOR	*Er	SS	WATER-TANK SENSOR SHORT&OPEN CIRCUIT	○	○	○	○	○

* ALL DISPLAY PARTS TURN OFF OTHER THAN FREEZER ROOM NOTCH TEMPERATURE DISPLAY AND REFRIGERATOR ROOM NOTCH TEMPERATURE DISPLAY (FAILURE CODE INDICATION PART) IN CASE OF INDICATING FAILURE MODES AFTER ERROR OCCURRENCE 3 HOURS.
ALL ERRORS EXCEPT * MARK IS DISPLAYED IN INDICATION WINDOW AFTER ERROR OCCURRENCE 3 HOURS.
(WHEN ERROR OCCUR, ALWAYS CAN CONFIRM ERROR PRESSING TOGETHER "Quick Freeze Key" AND "Freeze Key" MORE THAN 1 SECOND.)

(2) TEST FUNCTION

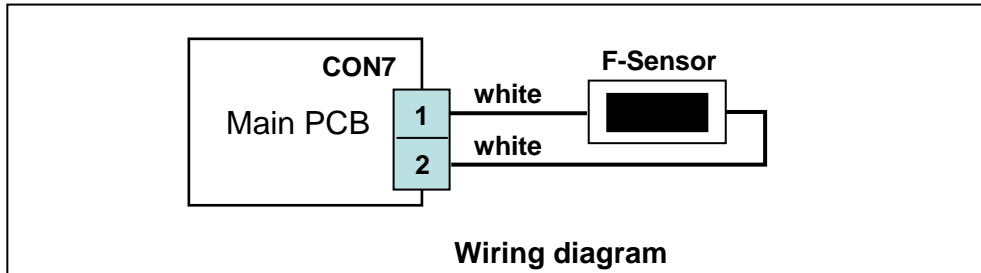
TEST KEY EXISTS ON PWB ASSY, MAIN BOARD.

MODE	OPERATION	CONTENTS		REMARKS
TEST1	PRESS TEST BUTTON ONCE <STRONG COLD MODE>	1. CONTINUOUS OPERATION OF COMPRESSOR 2. CONTINUOUS OPERATION OF FREEZING BLDC MOTOR (HIGH-SPEED RPM) AND COOLING BLDC MOTOR 3. DEFROST HEATER TURNS OFF	4. STEPPING MOTOR DAMPER IS COMPLETELY OPENED (OPEN OF BAFFLE) 5. ALL DISPLAY GRAPHICS TURNS ON	FREEZING FAN TURNS OFF IN DOOR OPENING
TEST2	PRESS TEST BUTTON ONCE AT THE TEST MODE 1 STATUS <FORCED DEFROST MODE>	1. COMPRESSOR OFF 2. FREEZING BLDC MOTOR AND COOLING BLDC MOTOR TURN OFF 3. DEFROST HEATER TURNS ON	4. STEPPING MOTOR DAMPER IS COMPLETELY CLOSED (CLOSING OF BAFFLE) 5. ALL DISPLAY GRAPHICS TURNS OFF (ONLY FAILURE CODE INDICATION PART TURNS ON "22" STATUS)	RETURN TO THE NORMAL MODE WHEN THE DEFROST SENSOR IS ABOVE +5°C
NORMAL STATUS	PRESS TEST BUTTON ONCE AT THE TEST MODE 2 STATUS	RETURNING TO INITIAL STATUS		COMPRESSOR WILL OPERATE AFTER DELAY FOR 7 MINUTES

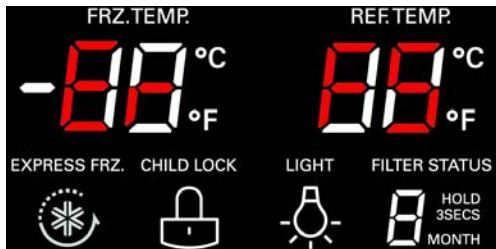
TROUBLE DIAGNOSIS

1-2. Troubleshooting With Error

Freezer Sensor Error



Is it displayed under picture?



Yes

Is the connection loose?
(CON7)



Yes

Reconnect

No

Power Off

Tip : To protection of
MICOM

Disconnect CON7 and
measure the value. Is
resistance value between
pins 1 & 2 of CON7 as
below? (WH to WH)



Pin2 Pin1

Test Point	Result
Pin1 to pin2	1.4 ~ 120 kΩ

Yes

Reconnect CON7 and Power
ON

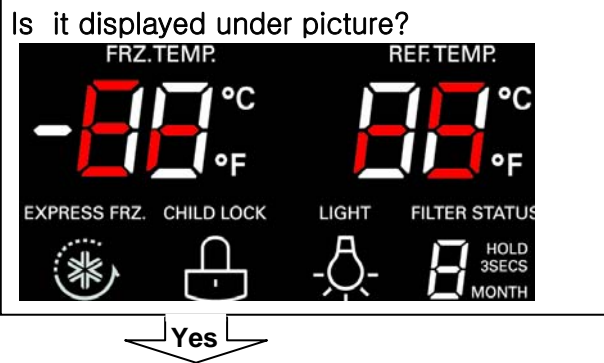
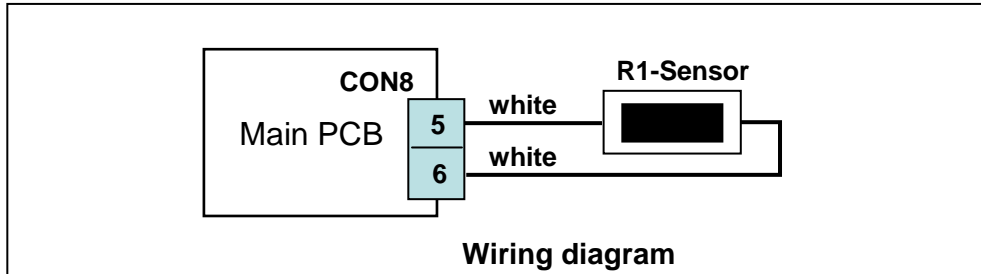
If the same situation appears, Repla
ce the main PCB.
Otherwise, explain to the customer!

No

Replace
F-sensor

TROUBLE DIAGNOSIS

Refrigerator Sensor Error



Is the connection loose?
(CON8)



No

Power Off

Tip : To protection of
MICOM)

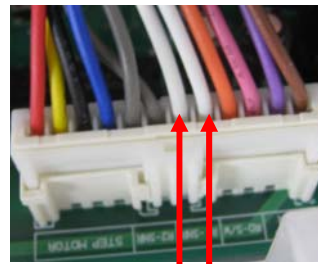
Yes

Reconnect

Disconnect CON8 and
measure the value. Is
resistance value between
pins 5 & 6 of CON8 as
below? (WH to WH)

No

Replace
R-sensor



Pin6 Pin5

Test Point	Result
Pin5 to Pin 6	6 ~ 300 kΩ

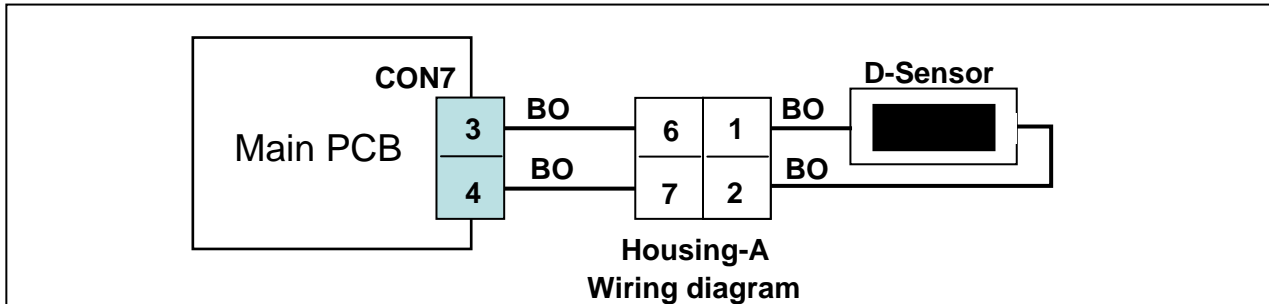
Yes

Reconnect CON8 and Power
ON

If the same situation appears, Repla
ce the main PCB.
Otherwise, explain to the customer!

TROUBLE DIAGNOSIS

Defrost Sensor Error



Is it displayed under picture?



Yes

Is the connection loose?
(CON7)



Yes

Reconnect

No

Power Off

Tip : To protection of MICOM

Disconnect CON6 and
measure the value. Is
resistance value between
pins 3 & 4 of CON7 as
below? (BO to BO)



Pin4 Pin3

Test Point	Result
Pin3 to Pin 4	6 ~ 300 kΩ

Yes

No

Replace
D_Sensor

Is resistance value between
pins 1 & 2 of Housing- A as
below? (BO to BO)

No

Replace a
D-Sensor



Pin2
Pin1

Test Point	Result
Pin1 to pin2	1.156 ~ 141.5 kΩ

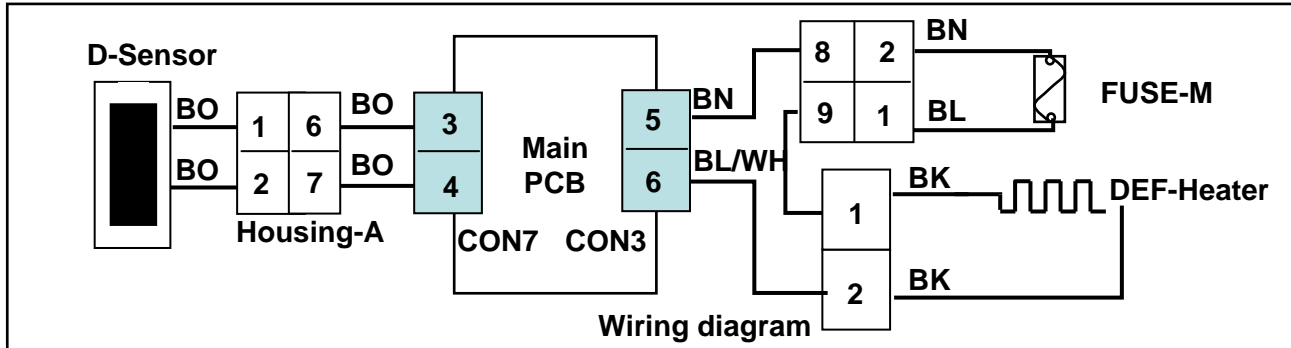
Yes

Reconnect and Power ON

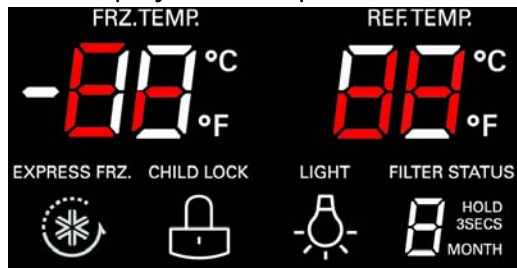
If the same situation appears, Repla
ce the main PCB.
Otherwise, explain to the customer!

TROUBLE DIAGNOSIS

Defrost Heater Error

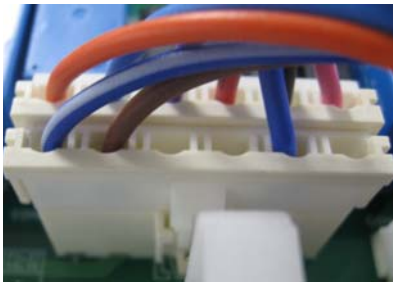


Is it displayed under picture?



Yes

Is the connection loose?



CON3



CON7

No

Yes

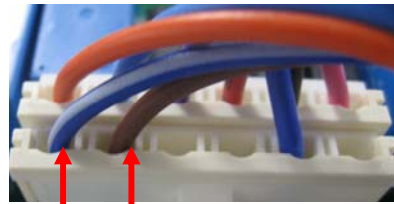
Reconnect

Enter the TEST 2 MODE

Is the voltage value between pins 6(BL/WH) and 5 (BN) of CON3 230 V AC?

No

Replace MAIN PCB



Pin6 Pin5

Relay operation

Test Point	Result
Pin5 To Pin6	230V

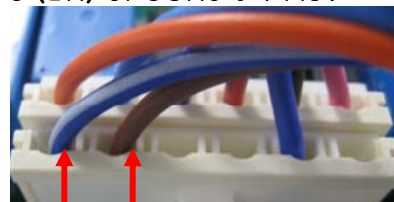
Yes

Enter the TEST 1 MODE

Is the voltage value between pins 6(BL/WH) and 5 (BN) of CON3 0 V AC?

No

Replace MAIN PCB



Pin6 Pin5

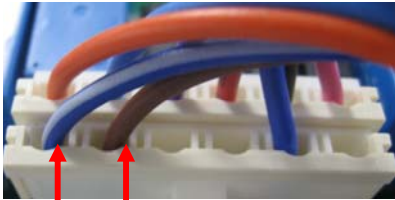
Relay Open

Test Point	Result
Pin5 To Pin6	0~2V

Yes

TROUBLE DIAGNOSIS

Is the resistance value between pins 6(BL/WH) and 5 (BN) of CON3 like as below?



Pin6 Pin5
Resistance

Test Point	Result
Pin5 To Pin6	180 ~ 230 Ω

No

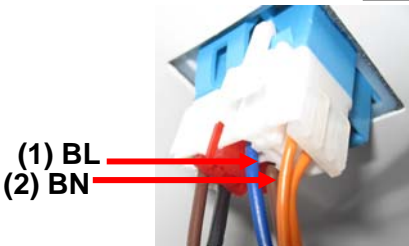
Normal

Yes

Is the resistance value of Fuse -M like as below?

No

Reconnect



Open or Short of Fuse-M

Test Point	Result
(1) To (2)	0~0.5 Ω

Yes

Is the resistance value of heater like as below?

No

Replace Heater



Heater Resistance

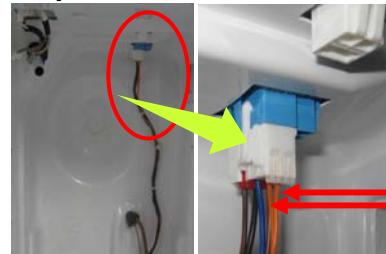
Test Point	Result
(1) To (2)	180 ~ 230 Ω

Yes

Is the resistance value of DEF-sensor like as below? It depends on the temperature.

No

Replace DEF-sensor



(1) BO
(2) BO

Defrost Sensor Resistance

Test Point	Result	Test Point	Result
-30℃	129.3 kΩ	10℃	19.53 kΩ
-20℃	76.96 kΩ	20℃	13.03 kΩ
-10℃	47.34 kΩ	30℃	8.896 kΩ
0℃	30 kΩ	40℃	6.201 kΩ

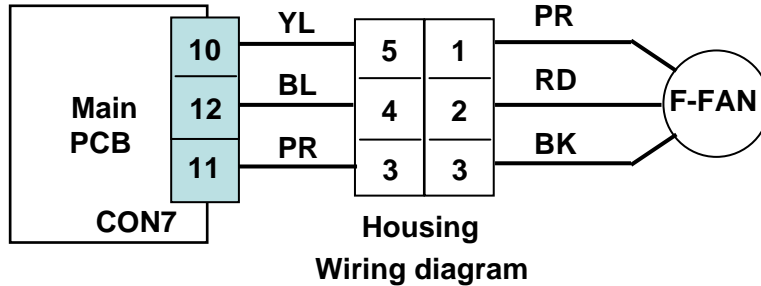
Yes

Explain to the customer!

: It can be occurred, when the gasket is not stuck to product or when you put the high temperature loads (hot foods) a lot in the product.

TROUBLE DIAGNOSIS

Freezer Fan Error



Is it displayed under picture?



Yes

Is the connection loose?



Yes

Reconnect

No

Reset and Enter the TEST 1 MODE
Is the output voltage between pin11 and pin12 of CON6 like as below?



Pin12 Pin11

Freezer Fan Voltages

Test Point	Result
pin11 To pin12	12 ~ 16 V

Yes

NO

Replace MAIN PCB

Does the cold-air come out of the top of the main duct?



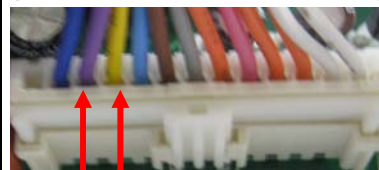
Yes

NO

Check fan motor (Connector, Frozen, Locked)



Is the feedback voltage between pin10 and pin11 of CON7 like as below? (from motor to main board)



Pin11
Pin10

No

Replace Main PCB

Feedback Voltages

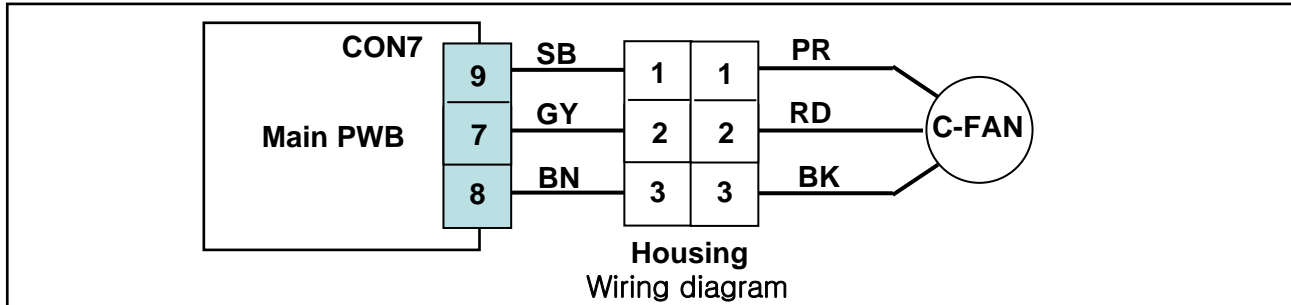
Test Point	Result
Pin10 To pin11	1 ~ 4 V

Yes

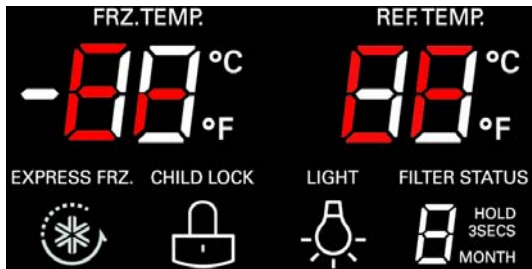
Explain to the customer!

TROUBLE DIAGNOSIS

Condenser Fan Error

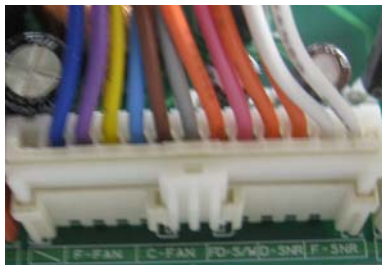


Is it displayed under picture?



Yes

Is the connection loose?



Yes

Reconnect

No

**Reset and
Enter the TEST 1 MODE**

Is the output voltage
between pin7 and pin8 of
CON6 like as below?



Pin8 Pin7

Condenser Fan Voltages

Test Point	Result
pin7 To pin8	12 ~ 16 V

Yes

No

Replace
MAIN PCB

Is the condenser fan
rotate?



No

Check fan motor
(Connector,
Locked, mouse)

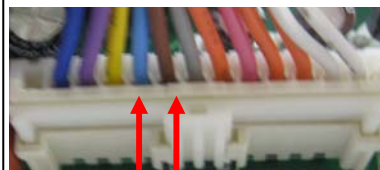


Yes

Is the feedback voltage
between pin8 and pin9 of
CON7 like as below?
(from motor to main board)

No

Replace
Main PCB



Pin9 Pin8

Feedback Voltages

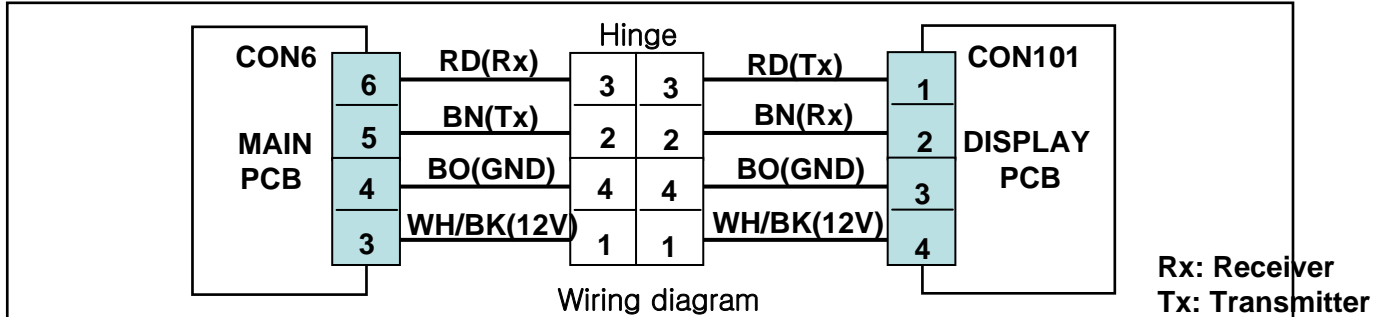
Test Point	Result
Pin8 To pin9	1 ~ 4 V

Yes

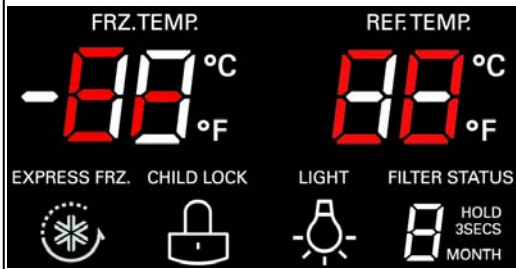
Explain to the customer!

TROUBLE DIAGNOSIS

Communication Error



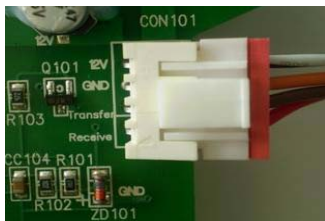
Is Er-CO displayed?



Yes

Display PCB

Is the connection loose?



Yes

Reconnect

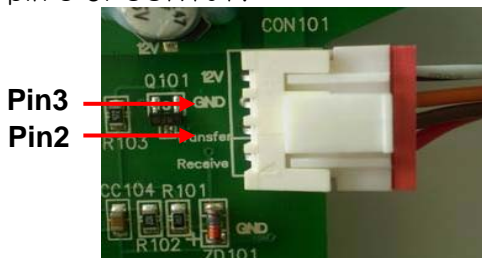
No

Display PCB

Is the voltage between pins 2 and pin 5 of CON101?

NO

Replace the Display PCB



Receiver fail Voltages

Test Point	Result
pin2 To pin3	0 V or 5 V

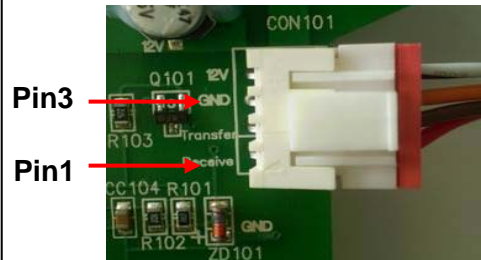
Yes

Display PCB

Is the voltage between pin1 and pin3 of CON101 0 V or 5 V?

NO

Replace the Display PCB



Transmitter Voltages

Test Point	Result
pin1 To pin3	0 V or 5 V

Yes

Is the joint connection loose In the Hinge?

Yes

Reconnect



No

TROUBLE DIAGNOSIS

MAIN PCB

Is the connection loose?



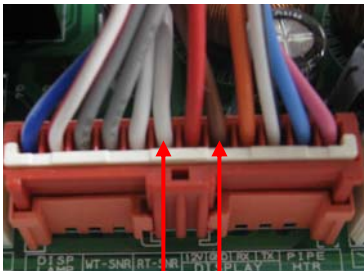
Yes

Reconnect

No

Main PCB

Is the voltage between pins 4 and pin 6 of CON6 0V or 5V?



Pin6 Pin4

No

Replace the Main PCB

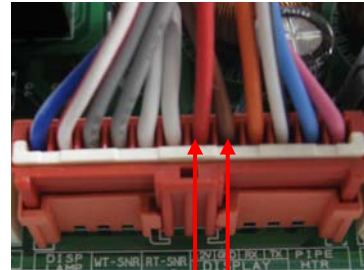
Receiver Voltages

Test Point	Result
pin4 To pin6	0 V or 5 V

Yes

Main PCB

Is the voltage between pin4 and pin5 of CON6 0 V or 5 V?



Pin5 Pin4

No

Replace the Main PCB

Transmitter Voltages

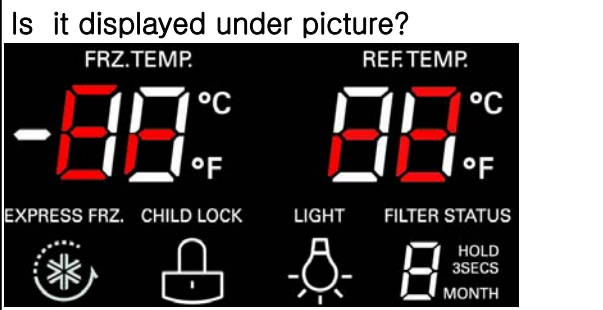
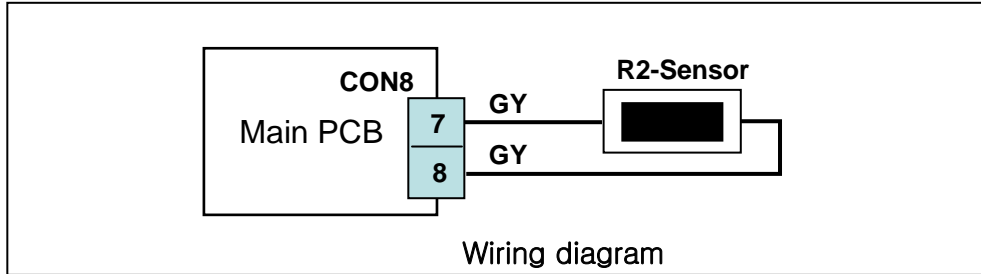
Test Point	Result
pin4 To pin5	0 V or 5 V

Yes

After plug in,
If Er-CO is disappeared,
Explain to the customer!

TROUBLE DIAGNOSIS

Refrigerator2 Sensor Error



Yes

Is the connection loose?(CON8)



No

Power Off
Tip : To protection of MICOM)

Yes

Reconnect

Disconnect CON8 and measure the value. Is resistance value between pins 7 & 8 of CON8 as below? (GY to GY)



Pin8 Pin7

Test Point	Result
Pin7 to pin8	6 ~ 300 kΩ

Yes

Reconnect CON8 and Power ON

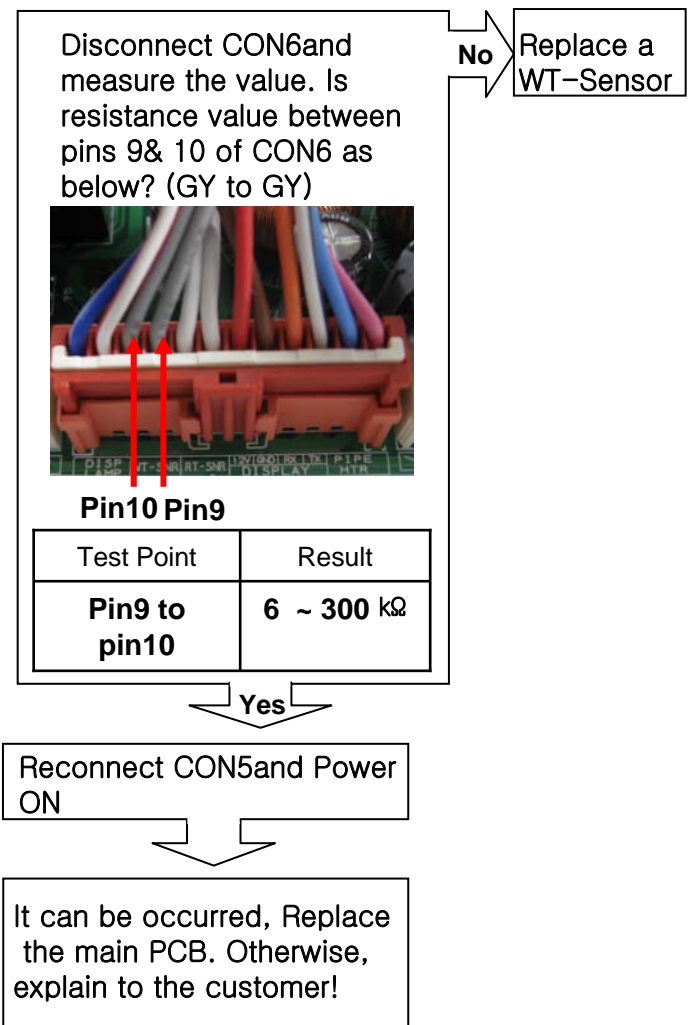
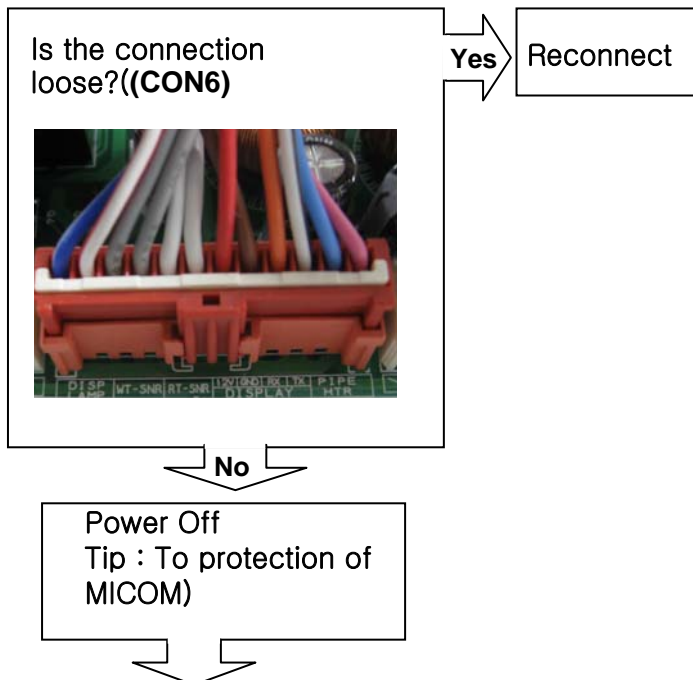
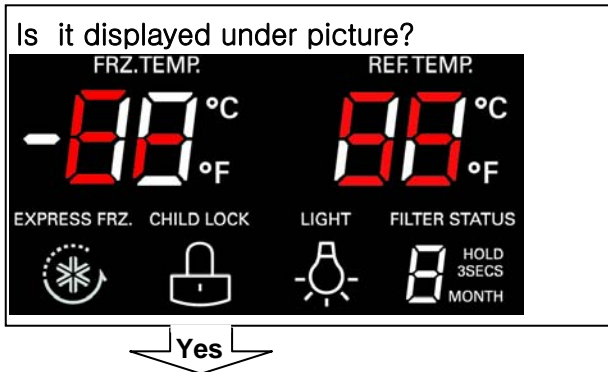
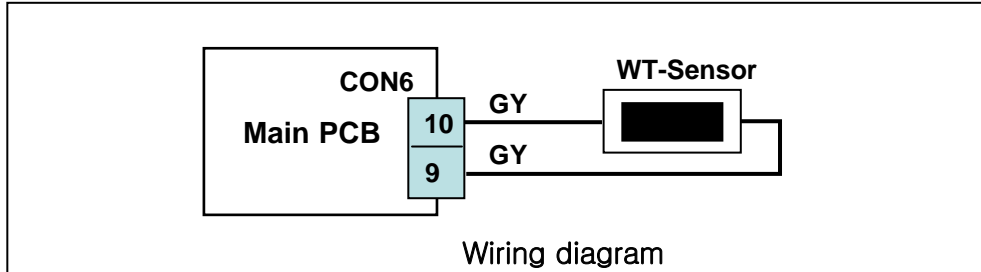
It can be occurred, Replace the main PCB. Otherwise, explain to the customer!

No

Replace a R2-Sensor

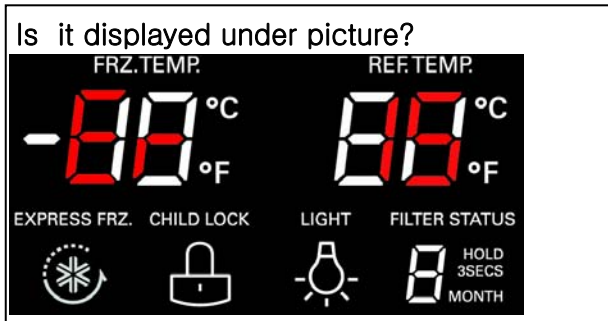
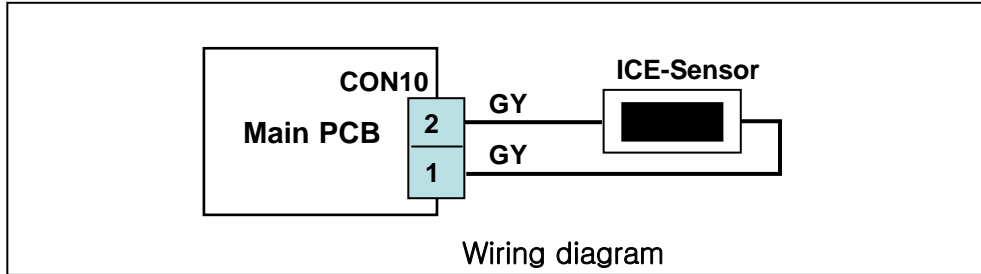
TROUBLE DIAGNOSIS

Water Tank Sensor Error



TROUBLE DIAGNOSIS

Ice Maker Sensor Error



Yes

Is the connection loose?(CON10)



Yes

Reconnect

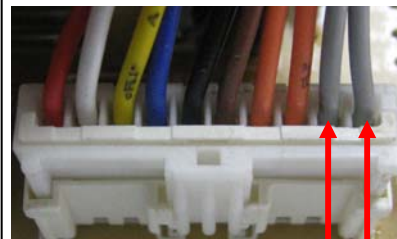
No

Power Off
Tip : To protection of MICOM)

Disconnect CON10 and measure the value. Is resistance value between pins 1 & 2 of CON10 as below? (GY to GY)

No

Replace a ICE-Sensor



Pin2 Pin1

Test Point	Result
Pin1 to pin2	1.4 ~ 120kΩ

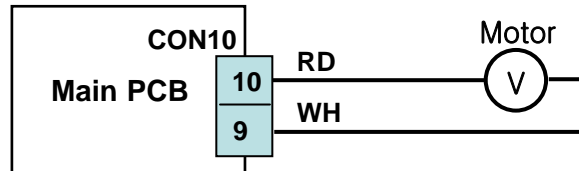
Yes

Reconnect CON10 and Power ON

It can be occurred, Replace the main PCB. Otherwise, explain to the customer!

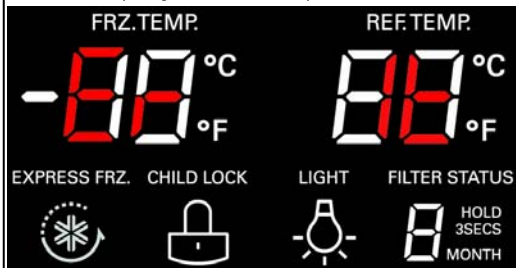
TROUBLE DIAGNOSIS

Ice Maker KIT Error



Wiring diagram

Is it displayed under picture?



Yes

Is the connection loose?(CON10)

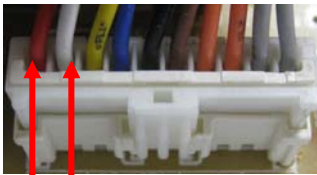


Yes

Reconnect

No

Is the voltage between pins 9 and pin 10 of CON10 5V ~ 12V?



Pin10Pin9

Motor Receiver Voltages

Test Point	Result
pin9 To pin10	5-12 V

NO

Replace the Main PCB

Yes

Inspection Ice Maker module part in freezer room.

Yes

Replace ICE Maker Unit



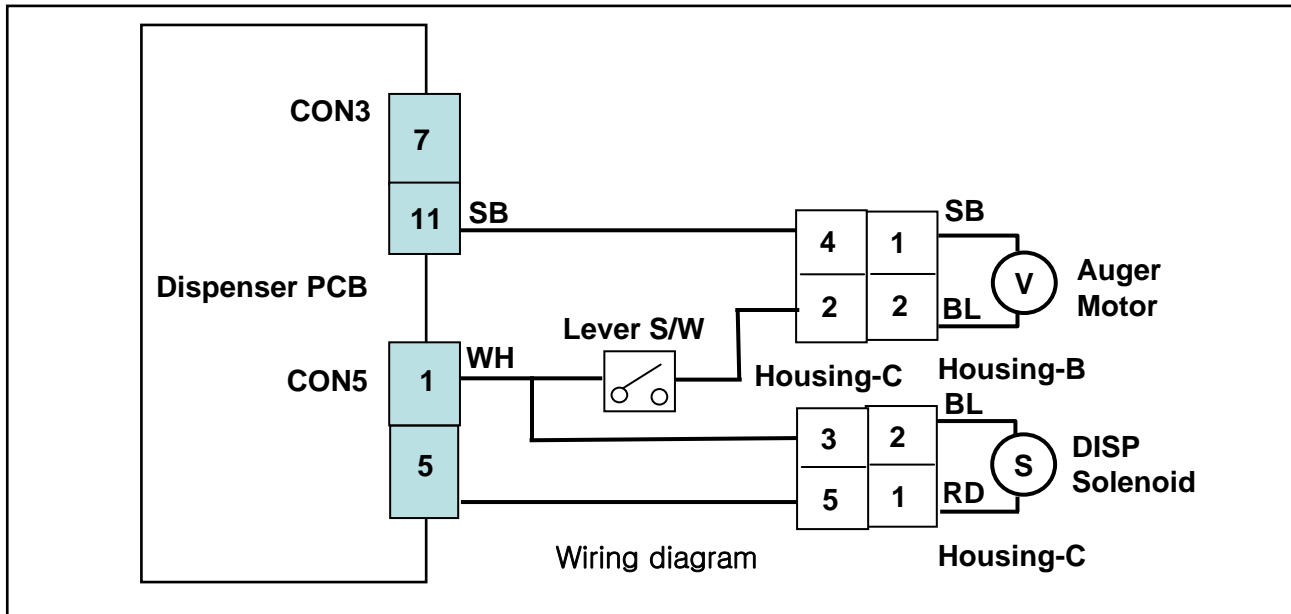
No

explain to the customer!

TROUBLE DIAGNOSIS

1-3. Troubleshooting Else

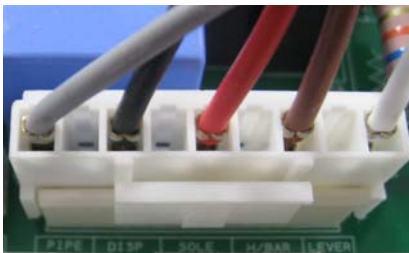
Crush Mode Doesn't work



Is the connection loose?
(CON3,4)

Yes

Reconnect



CON4



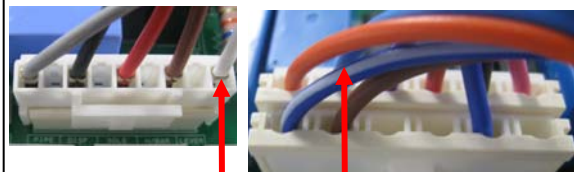
CON3

No

In Crush Mode,
Is the voltage between
pin2 of CON5 and pin11
of CON3 like as below,
while pushing the lever
switch?

No

Replace
Main PCB



CON5

Pin1

Pin11

CON3

Output voltage of auger motor

Level switch	Test Point	Result
Pushing	pin1 To pin11	230 V
Normal	pin1 To pin11	0 ~ 2V

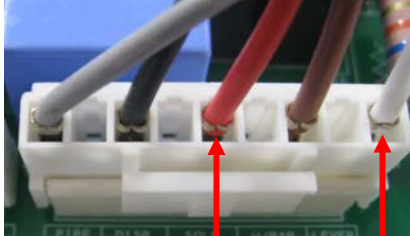
Yes

TROUBLE DIAGNOSIS

In Crush Mode,
Is the voltage between
pin1 and pin5 of CON5
like as below, while
pushing the lever switch?

No

Replace
Main PCB



Pin5

Pin1

Output voltage of dispenser solenoid

Level switch	Test Point	Result
Pushing	pin1 To pin5	230 V
Normal	pin1 To pin5	0 ~ 2V

Yes

Is the resistance value
between (1) and (2) of the
Auger motor like as below?

No

Replace
Auger Motor



(1)(2)

Test Point	Result
(1) To (2)	12.3 ~ 15.1 Ω

Yes

Is the resistance between
(1) and (2) of the
Dispenser solenoid like as
below?

No

Replace
Dispenser
Solenoid



(1)

(2)

Resistance of Dispenser solenoid

Test Point	Result
(1) To (2)	283 ~ 328 Ω

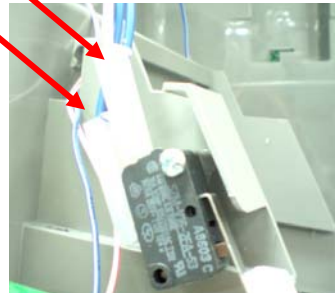
Yes

Is the condition of
the micro switch like as
below?

No

Replace
Micro
Switch

(1)
(2)



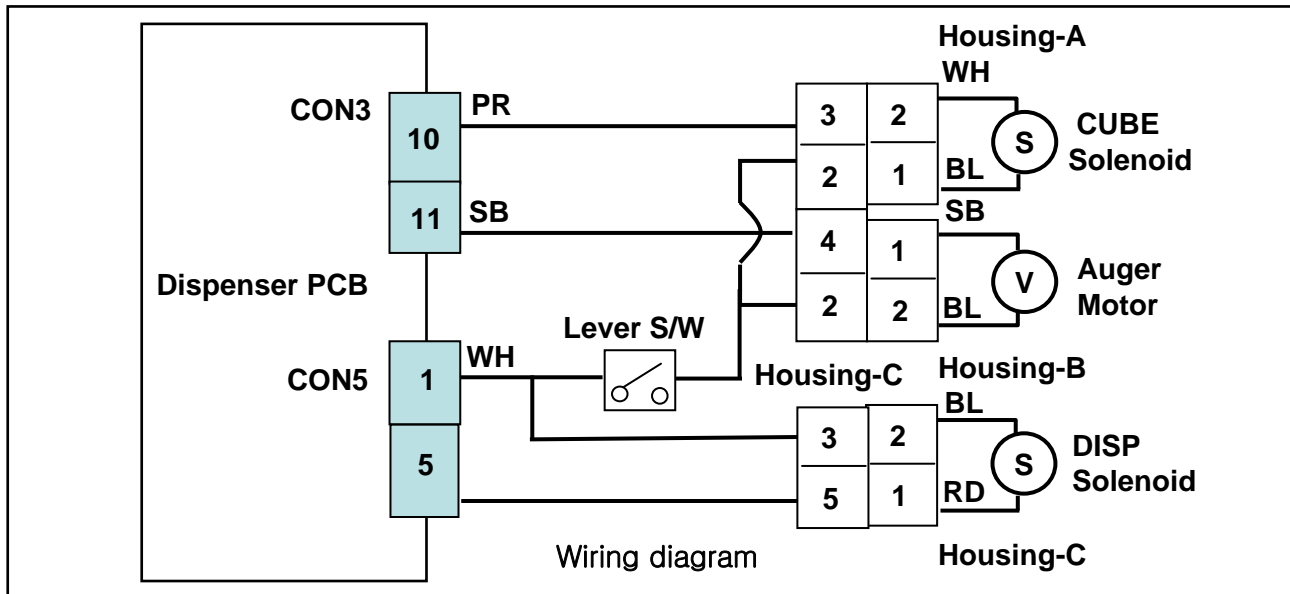
Status	Tester
Normal	Infinity
Push the Lever	0 Ω

Yes

After plug in,
explain to the customer!

TROUBLE DIAGNOSIS

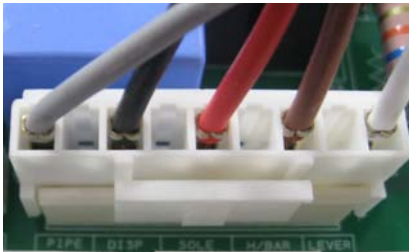
CUBE Mode doesn't work



Is the connection loose?

Yes

Reconnect



CON4



CON3

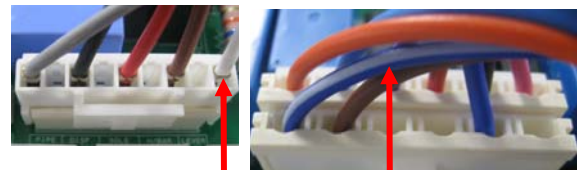
No

In CUBE Mode,

Is the voltage between pin2 of CON5 and pin10 of CON3 like as below, while pushing the lever switch?

No

Replace Main PCB



CON5

Pin1

CON3

Pin10

Relay open of cube solenoid

Level switch	Test Point	Result
Pushing	pin1 To pin10	230 V
Normal	pin1 To pin10	0 ~ 2V

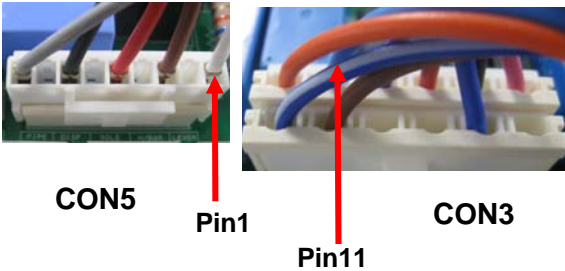
Yes

TROUBLE DIAGNOSIS

In Crush Mode,
Is the voltage between
pin2 of CON5 and pin11
of CON3 like as below,
while pushing the lever
switch?

No

Replace
Main PCB



CON5

Pin1

Pin11

CON3

Output voltage of auger motor

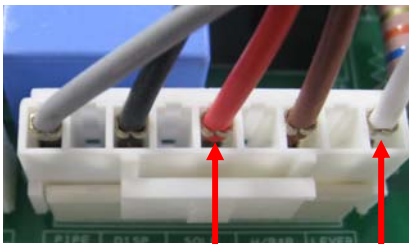
Level switch	Test Point	Result
Pushing	pin1 To pin11	230 V
Normal	pin1 To pin11	0 ~ 2V

Yes

In Crush Mode,
Is the voltage between
pin1 and pin5 of CON5
like as below, while
pushing the lever switch?

No

Replace
Main PCB



Pin5

Pin1

Output voltage of dispenser solenoid

Level switch	Test Point	Result
Pushing	pin1 To pin5	230 V
Normal	pin1 To pin5	0 ~ 2V

Yes

Is the resistance value
between (1) and (2) of the
Auger motor like as below?

No

Replace
Auger Motor

(1)
(2)



Resistance of Auger Motor at 25℃

Test Point	Result
(1) To (2)	12.3 ~ 20.1 Ω

Yes

Is the resistance value
between (1) and (2) of the
Cube solenoid like as
below?

No

Replace
Cube
Solenoid



Resistance of Cube solenoid

Test Point	Result
(1) To (2)	156.8 ~ 173.3 Ω

Yes

TROUBLE DIAGNOSIS

Is the resistance between (1) and (2) of the Dispenser solenoid like as below?



No

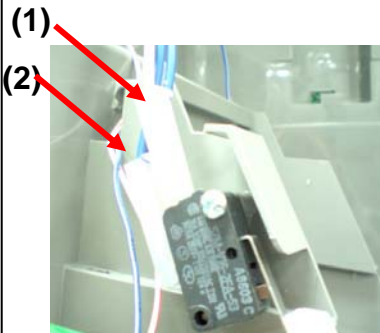
Replace
Dispenser
Solenoid

Resistance of Dispenser solenoid

Test Point	Result
(1) To (2)	283 ~328 Ω

Yes

Is the condition of the micro switch like as below?



No

Replace
Micro
Switch

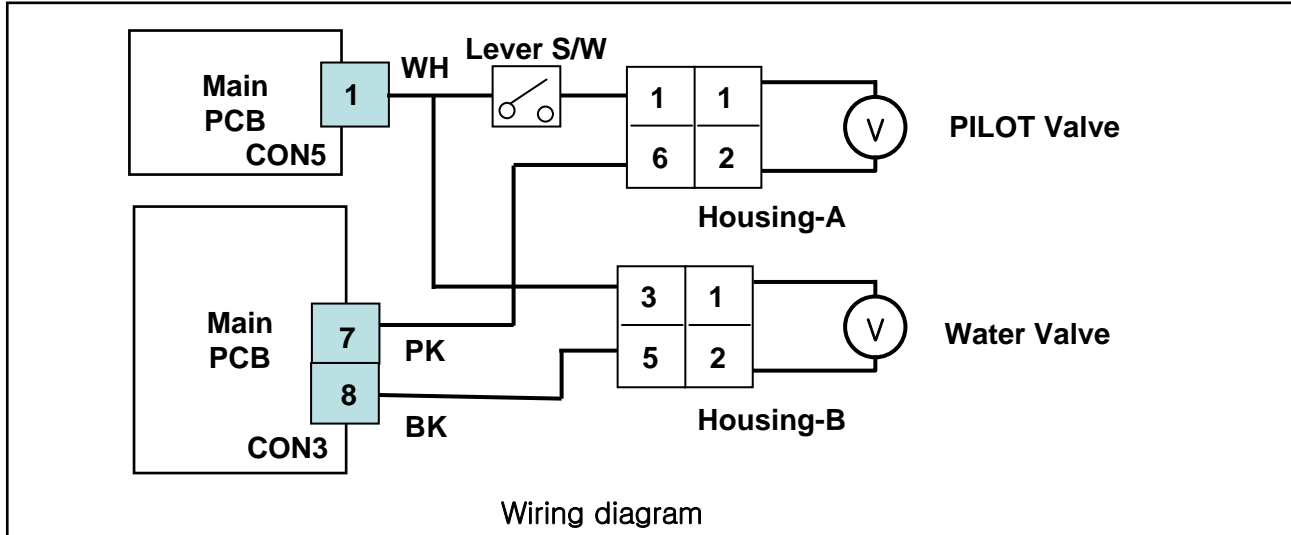
Status	Tester
Normal	Infinity
Push the Lever	0 Ω

Yes

After plug in,
explain to the customer!

TROUBLE DIAGNOSIS

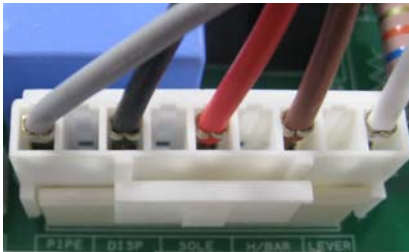
Water Mode Doesn't work



Is the connection loose?

Yes

Reconnect



CON4



CON3

No

In **Water Mode**,
Is the voltage between
pin1 of CON5 and pin7 of
CON3 like as below, while
pushing the lever switch?

No

Replace
Main PCB



CON5

Pin1



CON3

Pin7

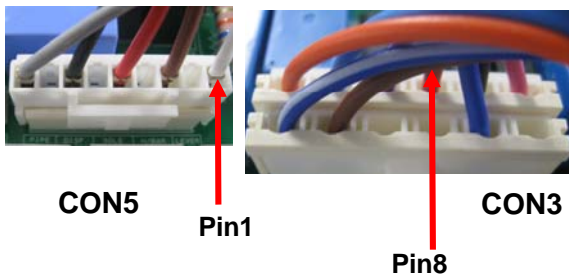
Output voltage of PILOT Valve

Level switch	Test Point	Result
Pushing	pin1 To pin7	230 V
Normal	pin1 To pin7	0 ~ 2V

Yes

In **Water Mode**,
Is the voltage between
pin1 of CON5 and pin8 of
CON3 like as below, while
pushing the lever switch?

Replace
Main PCB



Output voltage of Water Valve

Level switch	Test Point	Result
Pushing	pin1 To pin8	230 V
Normal	pin1 To pin8	0 ~ 2V

Yes

Water Valve
Is the resistance value of
Water Valve like as
below?

No

Replace
Water-valve



Ice Maker

Dispenser

Checking resistance of Water Valve

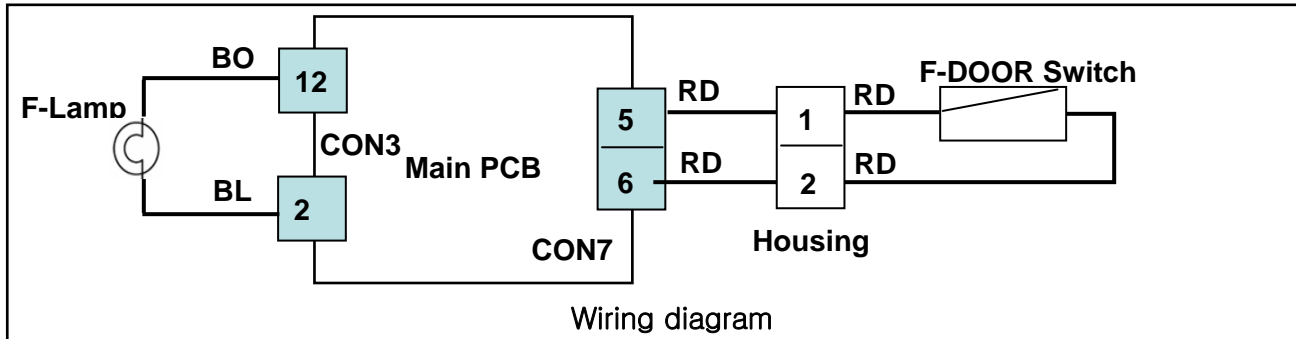
Test Point	Result
(1) To (2)	1.4 ~ 1.6 K Ω

Yes

After plug in,
explain to the customer!

TROUBLE DIAGNOSIS

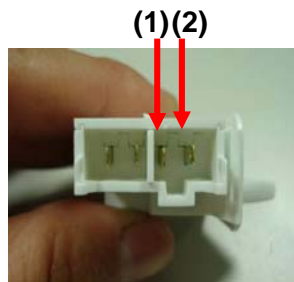
Freezer-lamp Doesn't work



Is the condition of the freezer door switch like as below?

No

Replace Door switch



Status	Tester
Normal	0 Ω
Push the Switch	Infinity

Yes

Is the connection loose?(CON3/CON7)

Yes

Reconnect



CON3

CON7



No

Is the voltage between pin 5 and 6 of CON7 like as below?

No

Replace Main PCB



Pin6 Pin5

Voltage of Door switch

Door	Test Point	Result
Closed	Pin5 To Pin6	5 V
Open	Pin5 To Pin6	0 V

Yes

Is the voltage between pin2 and pin12 of CON3 like as below?

No

Replace Main PCB



PIN12

PIN2

voltage of Freezer lamp

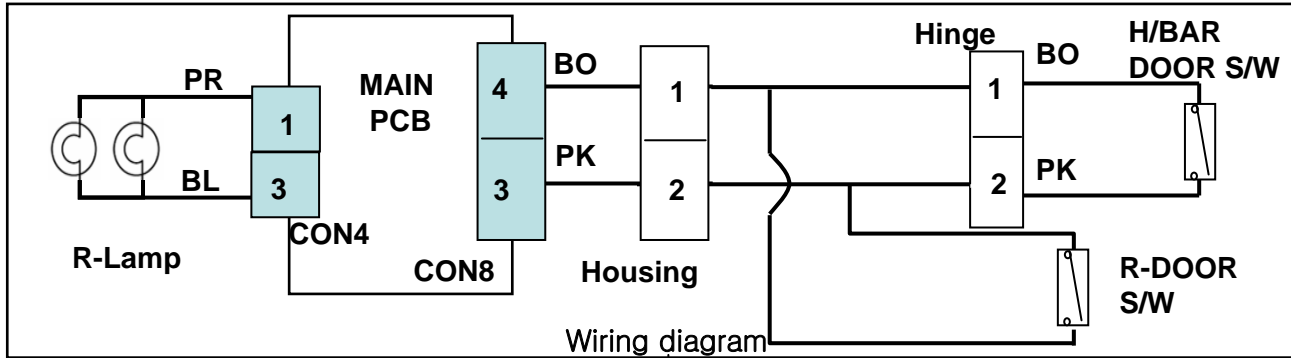
Door	Test Point	Result
Closed	Pin2 To Pin12	0 ~ 2 V
Open	Pin2 To Pin12	230 V

Yes

Replace Lamp

TROUBLE DIAGNOSIS

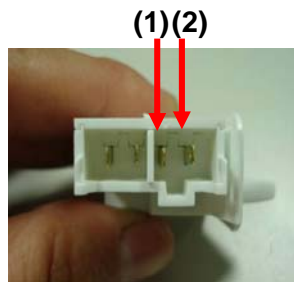
Refrigerator-lamp Doesn't work



Is the condition of the Refrigerator door switch like as below?

No

Replace Door switch



Status	Tester
Normal	0 Ω
Push the Switch	Infinity

Yes

Is the connection loose?(CON4/CON8)

Yes

Reconnect



CON4



CON8

No

Is the voltage between pin 3 and 4 of CON8 like as below?



Pin4 Pin3

Voltage of Door switch

Door	Test Point	Result
Closed	Pin3 To Pin4	5 V
Open	Pin3 To Pin4	0 V

No

Replace Main PCB

Yes

Is the voltage between pin 1 and pin3 of CON4 like as below?



PIN3 PIN1

voltage of Refrigerator lamp

Door	Test Point	Result
Closed	Pin1 To Pin3	0 ~ 2 V
Open	Pin1 To Pin3	230 V

No

Replace Main PCB

Yes

Replace Lamp

TROUBLE DIAGNOSIS

Poor cooling in the refrigerator compartment

Is the voltage between pin 11 and pin 12 of CON7 like as below?



Pin12 Pin11

Voltage of F-fan

Test Point	Result
pin11 To pin12	12 ~ 16 V

NO

Replace Main PCB

Yes

Is the voltage between pin 10 and pin 11 of CON7 like as below?



Pin11 Pin10

Feedback voltage of F-fan

Test Point	Result
Pin10 To pin11	1 ~ 4 V

NO

Replace Main PCB

Yes

Does the cold-air come out of the top of the main duct?

No

Check the Damper itself



Yes

Enter the TEST 1 MODE
Does not cold-air come out of the top of the main duct?

Yes

Check the Damper itself



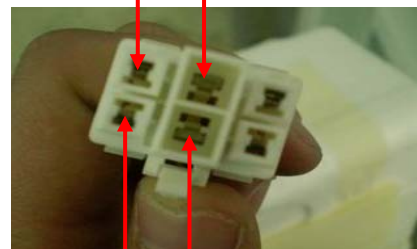
No

Checking Damper itself
Is the resistance Values between (1) & (4), (2) & (3) like as below?

No

Replace Damper

(2)WH (4)YL



(3)BL (1)RD

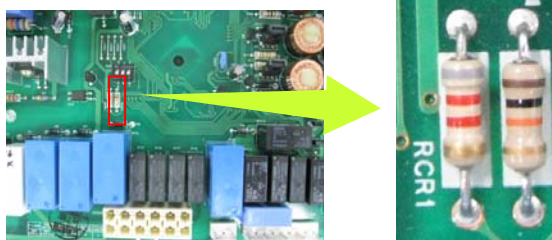
Resistance of Damper

Test Point	Result
(1) To (4)	369 ~ 451 Ω
(2) To (3)	369 ~ 451 Ω

TROUBLE DIAGNOSIS

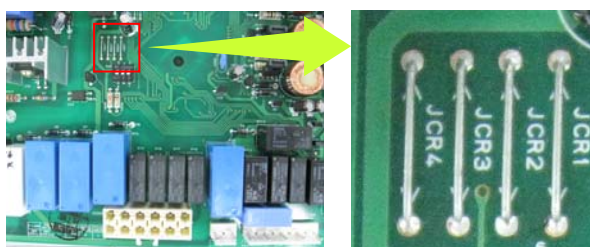
After reset the unit, take steps to PCB as follows for temperature compensation.

1. replacing RCR1



RCR1	Temp. Compensation	Remark
10 kΩ	0 deg	Current
8.2 kΩ	- 0.5 deg	
5.6 kΩ	- 1.0 deg	
3.3 kΩ	-1.5 deg	
2.0 kΩ	- 2.0 deg	
470 Ω	- 2.5 deg	Colder

2. Compensate with Jump wire cutting



JUMP WIRE	Temp. Compensation
	-1.0 deg
	-1.0 deg
Cutting both jumpers affords a 2° temperature compensation	

*** Cutting of jumper wire**

TROUBLE DIAGNOSIS

Over cooling in the refrigerator compartment

Check the Fan operation by placing your hand in front of the vents to feel for any cold air flow.

Door	Fan-Motor
Open	OFF
Closed	ON

Yes

Replace Fan

No

Enter the TEST 1 MODE
Does the cold-air coming out of the top of the main duct.?



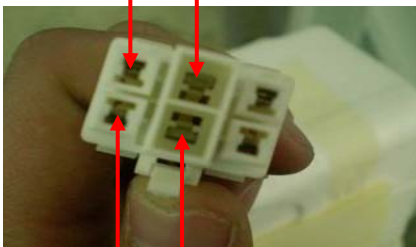
No

Check the Damper itself

Yes

Checking Damper itself
Is the resistance
Values between (1) & (4),
(2) & (3) like as below?

(2)WH (4)YL



(3)BL (1)RD

Resistance of Damper

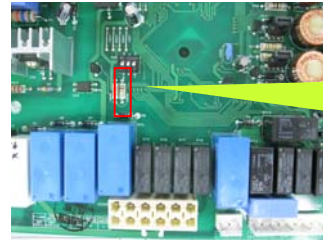
Test Point	Result
(1) To (4)	369 ~ 451 Ω
(2) To (3)	369 ~ 451 Ω

No

Replace Damper

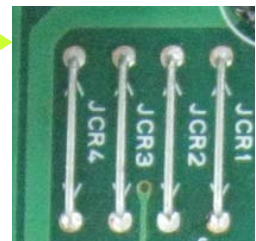
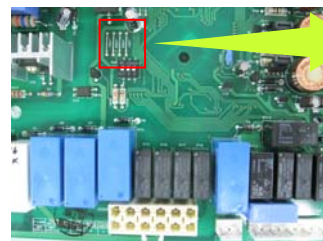
After reset the unit, take steps to PCB as follows for temperature compensation.

1. Compensate with replacing RCR1



RCR1	Temp. Compension	Remark
180 kΩ	+ 2.5 deg	Current ↑
56 kΩ	+ 2.0 deg	
33 kΩ	+ 1.5 deg	
18 kΩ	+ 1.0 deg	
12 kΩ	+ 0.5 deg	
10 kΩ	0 deg	Colder

2. Compensate with Jump wire cutting



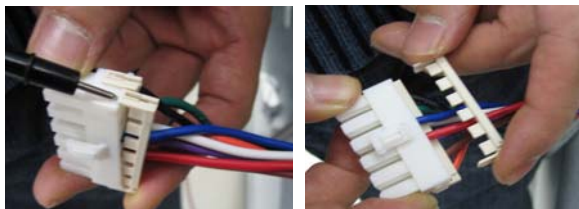
JUMP WIRE	Temp. Compensation
JCR1	+1.0 deg
JCR2	+1.0 deg
Cutting both jumpers affords a 2° temperature compensation	

* Cutting of jumper wire

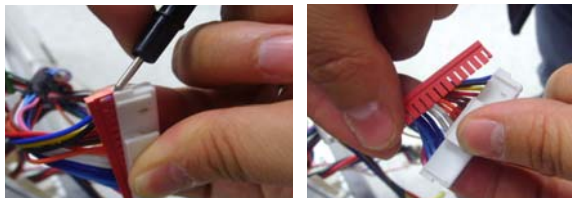
TROUBLE DIAGNOSIS

1. How To Remove Terminal Position Assurance (TPA)

* AC TPA



* DC TPA



→ After measure the values,
you should put in the TPA again

2. Wire Color

BL: Blue
WH: White
BO: Bright Orange
BK: Black
BN: Brown
PR: Purple
RD: Red
GN: Green
SB: Sky Blue
GY: Gray

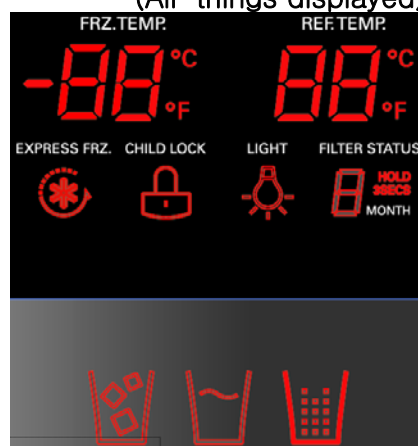
3. How To Start Test Mode

Push the TEST button on the Main PWB,
You can start the TEST MODE.

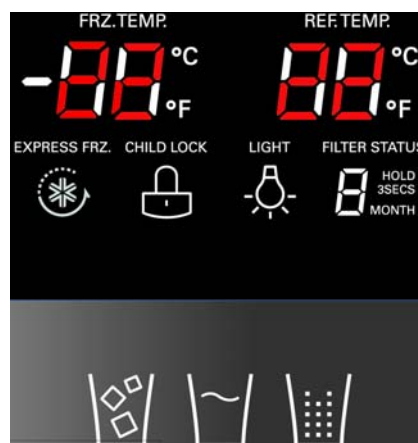
TEST BUTTON



*1 time : Comp / Damper / All FAN on,
(All things displayed)



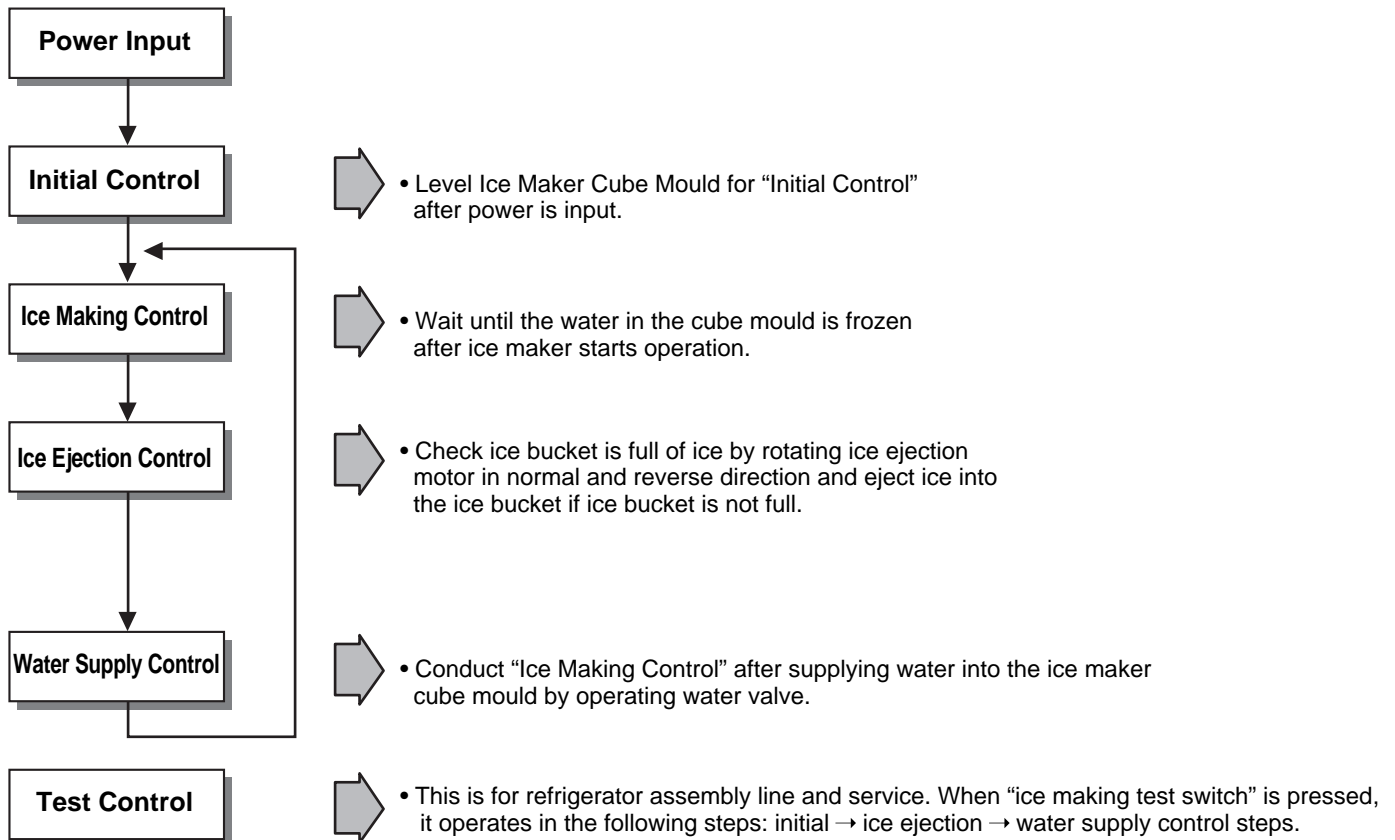
* 2 times : Damper closed



ICE MAKER AND DISPENSER WORKING PRINCIPLES AND REPAIR

1. Working Principles

1-1. Ice Maker Working Principles



1-2. Dispenser Working Principles

1. This function is available in Model GW-P227, GW-L227 where water and ice are available without opening freezer compartment door.
2. “Crushed Ice” is automatically selected when power is initially applied or reapplied after power cut.
3. When dispenser selection switch is continuously pressed, light is on in the following sequence: “Water” → “Cube Ice” → “Crushed Ice” .
4. Lamp is on when dispenser button is pressed.
5. In case of crushed ice mode, when dispenser button is pressed, dispenser solenoid and geared motor work so that crushed ice can be dispensed if there is ice in the ice bank.
6. In case of cubed ice mode, when dispenser button is pressed, cube ice solenoid and geared motor work so that cube ice can be dispensed if there is ice in the ice bank.
7. In case of water mode, when dispenser button is pressed, water valve opens and water is supplied if water valve is normally installed on the right side of the machine room.
8. Ice and water are not available when freezer door is open.

ICE MAKER AND DISPENSER WORKING PRINCIPLES AND REPAIR

2. Function of Ice Maker

2-1. Initial Control Function

1. When power is initially applied or reapplied after power cut, it detects level of ice maker cube mould after completion of MICOM initialization. The detecting lever moves up and down.
2. The level of ice maker cube mould is judged by output signal, high and low signal, of Hall IC. Make the cube mould to be horizontal by rotating ice ejection motor in normal or reverse direction so that High/Low signal can be applied to MICOM Pin No. 42.(bar LED: Pin NO. 46)
3. If there is no change in signals one minute after the geared motor starts to operate, it stops icemaker operation and check the signal every hour. It resets initialization of icemaker when it becomes normal.
4. It judges that the initial control is completed when it judges the ice maker cube mould is horizontal.
5. Ice ejection conducts for 1 cycle irrespective of ice in the ice bucket when power is initially applied.

2-2. Water Supply Control Function

1. This is to supply water into the ice maker cube mould by operating water valve in the machine room when ice ejection control is completed and ice maker mould is even.
2. The quantity of water supplied is determined by DIP switch and time.

<Water Supply Quantity Table>

No	DIP SWITCH SETTING		WATER SUPPLY TIME	REMARKS
	S1	S2		
1	OFF	OFF	4.5 SEC	* The quantity of water supplied depends on DIP switch setting conditions and water pressure as it is a direct tap water connection type. (the water supplied is generally 60 cc to 100 cc) * DIP switch is on the main PCB.
2	ON	OFF	4.0 SEC	
3	OFF	ON	5.5 SEC	
4	ON	ON	6.5 SEC	

3. If water supply quantity setting is changed while power is on, water supplies for the amended time. If DIP switch is changed during water supply, water shall be supplied for the previous setting time. But it will supply for the amended time from the next supply.
4. When water supply signal is applied to water and ice valves at the same time during water supply, water shall be supplied to water valve. If water supply signal is applied to ice valve during water supply, water shall be supplied to both water and ice valves.

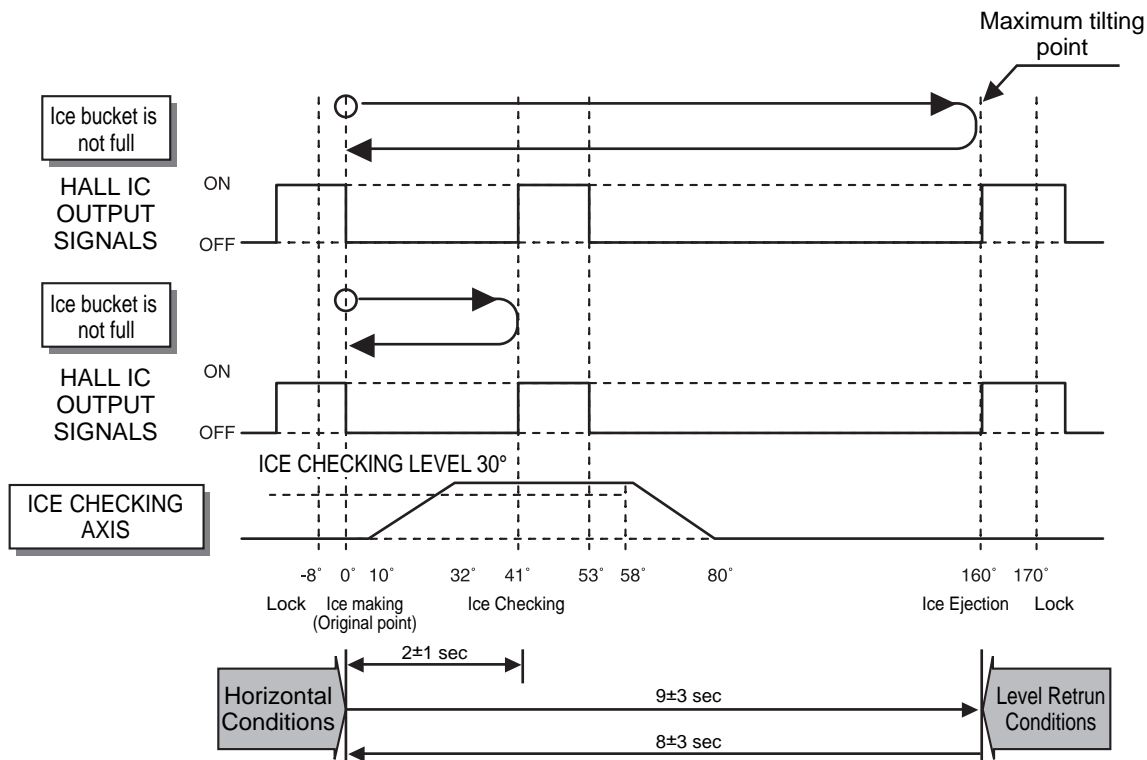
2-3. Ice Making Control Function

1. Ice making control is carried out from the completion of water supply to the completion of ice making in the cube mould. Ice making sensor detects the temperature of cube mould and completes ice making. (ice making sensor is fixed below ice maker cube mould)
2. Ice making control starts after completion of water supply control or initial control.
3. At first, It is judged that ice making is completed when ice making sensor temperature reaches at -8°C after 70 minutes when water is supplied to ice maker cube mould.
4. Finally, It is judged that ice making is completed when ice maker sensor temperature reaches below -12 °C after 20 minutes in condition 3.

ICE MAKER AND DISPENSER WORKING PRINCIPLES AND REPAIR

2-4. Ice Ejection Control Function

1. This is to eject ice from ice maker cube mould after ice making is completed.
2. If Hall IC signal is on within 3.6 seconds after ice ejection motor rotates in normal direction, it does not proceed ice ejection but waits. If the ice bucket is full, ice ejection motor rotates in normal direction in every hour to check the condition of ice bucket. If the ice bucket is not full, the water supply control starts after completion of ice ejection control. If the ice bucket is full, ice ejection motor rotates in reverse direction and stops under ice making or waiting conditions.
3. If ice bucket is not full, ice ejection starts. The cube mould tilts to the maximum and ice is separated from the mould and ice checking lever raises.
4. Ice ejection motor stops for 1 second if Hall IC signal changes from OFF (low) to ON (high) after 3.6 seconds when ice ejection motor rotates in normal direction. If there is no change in Hall IC signals within 1 minute after ice ejection motor operates, ice ejection motor stops as ice ejection motor or hall IC is out of order.
5. If ice ejection motor or Hall IC is abnormal, ice ejection motor rotates in normal direction to exercise initial operation. It resets the ice maker if ice ejection motor or Hall IC is normal.
6. The mould stops for 1 second at maximum tilted conditions.
7. The mould returns to horizontal conditions as ice ejection motor rotates in reverse direction.
8. When the mould becomes horizontal, the cycle starts to repeat:
Water Supply → Ice Making → Ice Ejection → Mould Returns to Horizontal



<Timing Chart During Ice Ejection>

ICE MAKER AND DISPENSER WORKING PRINCIPLES AND REPAIR

2-5 Test Function

1. It is to force the operation during operation test, service, and cleaning. The test switch is mounted under the automatic ice maker. The test function starts when the test switch is pressed for more than 0.5 second.
2. Test button does not work during ice ejection and water supply. It works when it is in the horizontal conditions. If mould is full of ice during test function operation, ice ejection control and water supply control do not work.
3. When test switch is pressed for more than 0.5 second in the horizontal conditions, ice ejection starts irrespective of the mould conditions. Water shall be splashed if test switch is pressed before the water in the mould freezes. Water shall be supplied while the mould returns to the horizontal conditions after ice ejection. Therefore the problems of ice ejection, returning to the horizontal conditions, and water supply can be checked by test switch. When test function performs normally, buzzer sounds and water supply shall carry out. Check it for repair if buzzer does not sound.
4. When water supply is completed, the cycle operates normally as follows: Ice making → Ice ejection → Returning to horizontal conditions → Water supply
5. Remove ice from the ice maker cube mould and press test switch when ice maker cube mould is full of ice as ice ejection and water supply control do not work when cube mould is full of ice.

2-6. Other functions relating to freezer compartment door opening

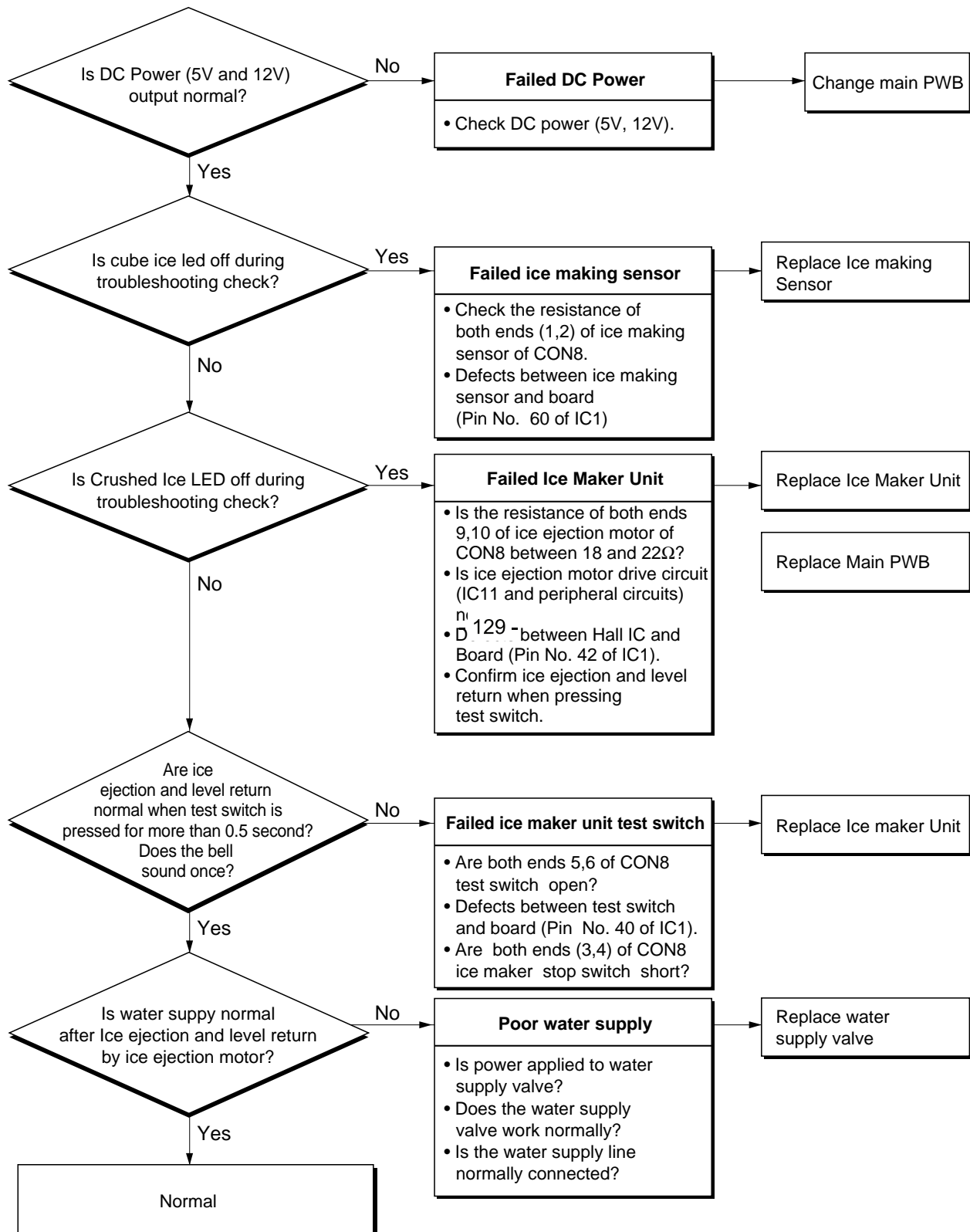
1. When freezer door is open, ice dispenser stops in order to reduce noise and ice drop.
2. When freezer door is open during ice ejection and cube mould returning to horizontal condition, ice ejection and cube mould level return proceed.
3. When freezer door is open, geared motor and cube ice solenoid immediately stop and duct door solenoid stops after 5 seconds.
4. Water dispenser stops in order to protect water drop when freezer door is open.
5. Test function operates normally irrespective of refrigerator compartment door opening.

ICE MAKER AND DISPENSER WORKING PRINCIPLES AND REPAIR

3. Ice Maker Troubleshooting

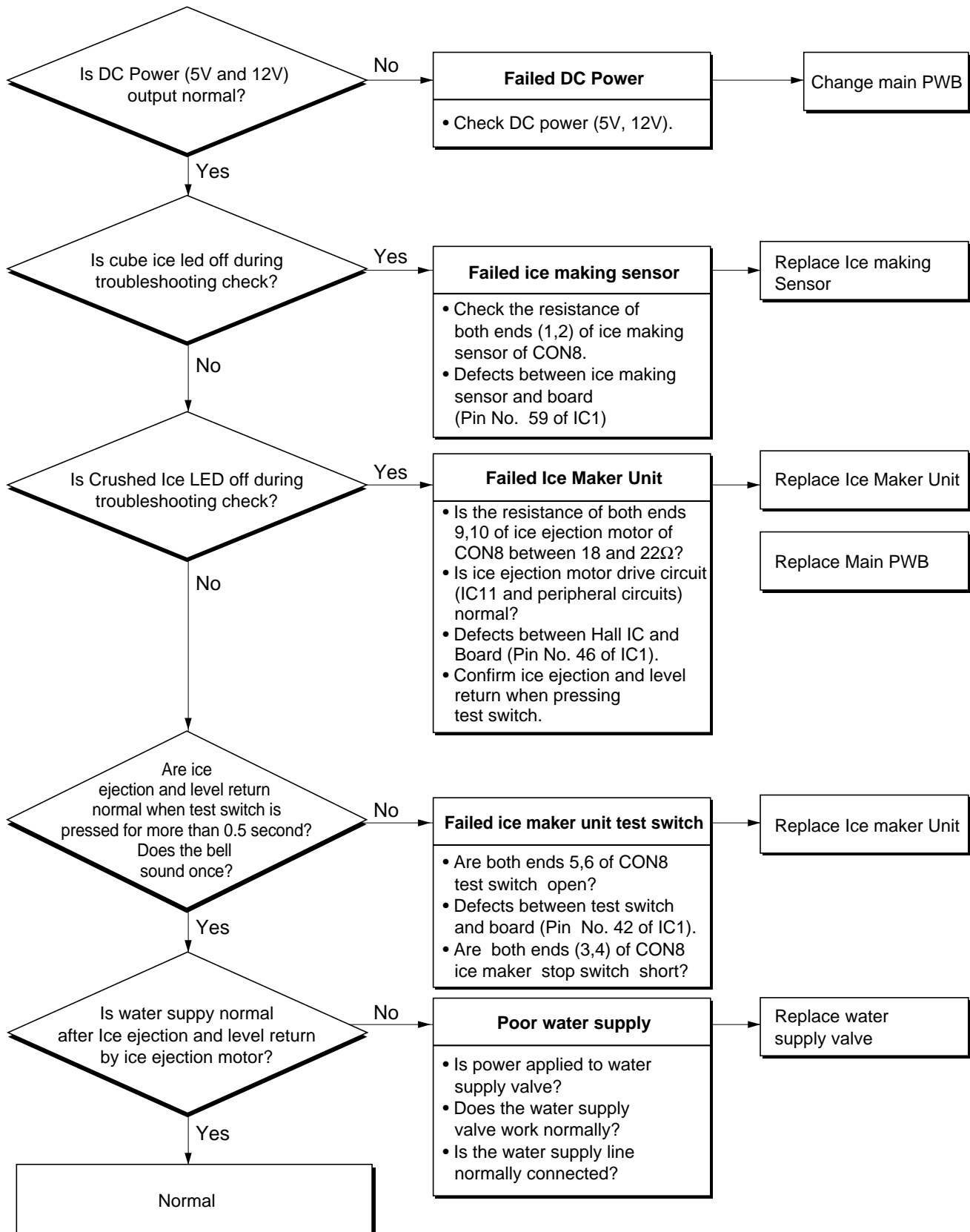
* **Troubleshooting:** it is possible to confirm by pressing freezer and refrigerator temperature control buttons for more than 1 second. (ice maker is normal if all leds are on): refer to trouble diagnosis function in MICOM function 2-8 (page 18)

<GW-P/L227: 88-LED>



ICE MAKER AND DISPENSER WORKING PRINCIPLES AND REPAIR

<GW-P/L227: Bar-LED>



TROUBLE DIAGNOSIS

1. TROUBLE SHOOTING

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
1. Faulty start	<p>1) No power on outlet.</p> <p>2) No power on cord.</p> <ul style="list-style-type: none"> - Bad connection between adapter and outlet. (faulty adapter) <ul style="list-style-type: none"> - The Inner diameter of adapter. - The distance between holes. - The distance between terminals. - The thickness of terminal. - Bad connection between plug and adapter (faulty plug). <ul style="list-style-type: none"> - The distance between pins. - Pin outer diameter. <p>3) Shorted start circuit.</p> <ul style="list-style-type: none"> - No power on power cord. <ul style="list-style-type: none"> - Disconnected copper wire. <ul style="list-style-type: none"> - Power cord is disconnected. - Faulty soldering. - Internal electrical short. - Faulty terminal contact. <ul style="list-style-type: none"> - Loose contact. <ul style="list-style-type: none"> - Large distance between male terminal. - Thin female terminal. - Terminal disconnected. - d sleeve assembly. - Disconnected. <ul style="list-style-type: none"> - Weak connection. - Short inserted cord length. - Worn out tool blade. <p style="text-align: center;">- 131 -</p> <ul style="list-style-type: none"> - O.L.P is off. <ul style="list-style-type: none"> - Capacity of O.L.P is small. - Characteristics of O.L.P is bad. - Bad connection. - Power is disconnected. <ul style="list-style-type: none"> - Inner Ni-Cr wire blows out. - Bad internal connection. - Faulty terminal caulking (Cu wire is cut). - Bad soldering. - No electric power on compressor. - Faulty compressor. - Faulty PTC. <ul style="list-style-type: none"> - Power does not conduct. - Damage. - Bad characteristics. - Initial resistance is big. - Bad connection with compressor. <ul style="list-style-type: none"> - Too loose. - Assembly is not possible. - Bad terminal connection. <p>4) During defrost.</p> <ul style="list-style-type: none"> - Start automatic defrost. - Cycle was set at defrost when the refrigerator was produced. 	<p>* Measuring instrument : Multi tester</p> <p>■ Check the voltage. If the voltage is within $\pm 85\%$ of the rated voltage, it is OK.</p> <p>■ Check the terminal movement.</p> <p>■ Check both terminals of power cord. Power conducts : OK. No power conducts : NG</p> <p>■ Check both terminals of O.L.P. If power conducts : OK. If not : NG.</p> <p>■ Check the resistance of both terminals. At normal temperature 6 : OK. If disconnected : ∞.</p>

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
2. No cooling.	<p>2) Refrigeration system is clogged.</p> <ul style="list-style-type: none"> Moisture clogged. <ul style="list-style-type: none"> Residual moisture in the evaporator. <ul style="list-style-type: none"> Air Blowing. <ul style="list-style-type: none"> Not performed. Too short. Impossible moisture confirmation. Low air pressure. Leave it in the air. <ul style="list-style-type: none"> During rest time. After work. Caps are missed. Residual moisture. <ul style="list-style-type: none"> Not dried in the compressor. Elapsed more than 6 months after drying Caps are missed. No pressure when it is open. No electric power on thermostat. <ul style="list-style-type: none"> Insufficient drier capacity. <ul style="list-style-type: none"> Dry drier - Drier temperature. Leave it in the air. <ul style="list-style-type: none"> Check on package condition. Good storage after finishing. Residual moisture in pipes. <ul style="list-style-type: none"> Caps are missed. <ul style="list-style-type: none"> During transportation. During work. Air blowing. <ul style="list-style-type: none"> Not performed. Performed. <ul style="list-style-type: none"> Too short time. Low air pressure. Less dry air. Moisture penetration - Leave it in the air. - Moisture penetration into the refrigeration oil. Weld joint clogged. <ul style="list-style-type: none"> Short pipe insert. Pipe gaps. <ul style="list-style-type: none"> Too large. Damaged pipes. Too much solder. Drier cloggeing. <ul style="list-style-type: none"> The capillary tube inserted depth. - Too much. Capillary tube melts. - Over heat. Clogged with foreign materials. <ul style="list-style-type: none"> Desiccant powder. Weld oxides. Drier angle. Reduced cross section by cutting. - Squeezed. Foreign material clogging. <ul style="list-style-type: none"> Compressor cap is disconnected. Foreign materials are in the pipe. 	<p>■ Check the clogged evaporator by heating (as soon as the cracking sound begins, the evaporator start freezing)</p> <p>■ The evaporator does not cool from the beginnig (no evidence of misture attached). The evaporator is the same as before even heat is applied.</p>

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
3. Refrigeration is weak.	<p>1) Refrigerant Partly leaked. └ Weld joint leak. └ Parts leak.</p> <p>2) Poor defrosting capacity.</p> <p style="margin-left: 20px;">└ Drain path (pipe) clogged. └ Inject P/U into drain hose. └ Inject through the hole. └ Seal with drain.</p> <p style="margin-left: 40px;">└ Foreign materials penetration. └ P/U lump input. └ Screw input. └ Other foreign materials input.</p> <p style="margin-left: 40px;">└ Cap drain is not disconnected.</p> <p style="margin-left: 20px;">└ Defrost heater does not generate heat. └ Parts disconnected. └ Heater Sheath └ Wire is cut. - Lead wire. - Heating wire. - Contact point between heating and electric wire. └ Dent by fine evaporator. └ Heating wire is corroded - Water penetration. Bad terminal connection.</p>	<p>■ Check visually.</p> <p>■ Check terminal Conduction: OK. No conduction: NG. If wire is not cut, refer to resistance. P=Power V=Voltage R=Resistance</p> $P = \frac{V^2}{R}$ $R = \frac{V^2}{P}$

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
3. Refrigeration is weak.	<ul style="list-style-type: none"> Residual frost. <ul style="list-style-type: none"> Weak heat from heater. <ul style="list-style-type: none"> Sheath Heater - rated. Heater plate - rated. Too short defrosting time. <ul style="list-style-type: none"> Defrost Sensor. <ul style="list-style-type: none"> - Faulty characteristics. Seat-D(missing, location, thickness). Structural fault. <ul style="list-style-type: none"> Gasket gap. Air inflow through the fan motor. Bad insulation of case door. No automatic defrosting. Defrost does not return. 	
3) Cooling air leak.	<ul style="list-style-type: none"> Bad gasket adhesion <ul style="list-style-type: none"> Gap. Bad attachment. Contraction. Door sag. <ul style="list-style-type: none"> Bad adhesion. Weak binding force at hinge. 	
4) No cooling air circulation.	<ul style="list-style-type: none"> Faulty fan motor. <ul style="list-style-type: none"> Fan motor. <ul style="list-style-type: none"> Self locked. Wire is cut. Bad terminal contact. Door switch. <ul style="list-style-type: none"> Faults. <ul style="list-style-type: none"> Contact distance. Button pressure. Melted contact. Contact. Refrigerator and freezer switch reversed. Button is not pressed. <ul style="list-style-type: none"> Poor door attachment. Door liner (dimension). Contraction inner liner. Misalignment. Bad terminal connection. P/U liquid leak. 	<p>■ Check the fan motor conduction: OK. No conduction: NG.</p>

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
3. Refrigeration is weak.	<p>4) No cooling air circulation.</p> <ul style="list-style-type: none"> Faulty fan motor. — Fan is constrained. <ul style="list-style-type: none"> Fan shroud contact. - Clearance. Damping evaporator contact. Accumulated residual frost. Small cooling air discharge. <ul style="list-style-type: none"> Insufficient motor RPM <ul style="list-style-type: none"> Fan overload. - Fan misuse. Bad low temperature RPM characteristics. Rated power misuse. Low voltage. Faulty fan. <ul style="list-style-type: none"> Fan misuse. Bad shape. Loose connection. - Not tightly connected. Insert depth. Shroud. — Bent. Ice and foreign materials on rotating parts. <p>5) Compressor capacity. <ul style="list-style-type: none"> Rating misuse. Small capacity. Low voltage. </p> <p>6) Refrigerant too much or too little. <ul style="list-style-type: none"> Malfunction of charging cylinder. Wrong setting of refrigerant. Insufficient compressor. - Faulty compressor. </p> <p>7) Continuous operation <ul style="list-style-type: none"> - No contact of temperature controller. - Foreign materials. </p> <p>8) Damper opens continuously. <ul style="list-style-type: none"> Foreign materials jammed. <ul style="list-style-type: none"> P/U liquid dump. EPS water sediment. Screw. Failed sensor. - Position of sensor. Characteristics of damper. <ul style="list-style-type: none"> Bad characteristics of its own temperature. Parts misuse. Change of temperature - Impact characteristics. </p> <p>9) Food storing place. - Near the outlet of cooling air.</p>	<p>■ Check visually after disassembly.</p> <p>■ Check visually after disassembly.</p>

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
4. Warm refrigerator compartment temperature.	1) Colgged cooling path. <ul style="list-style-type: none"> P/U liquid leak. Foreign materials. — P/U dump liquid. 2) Food storate. <ul style="list-style-type: none"> Store hot food. Store too much at once. Door open. Packages block air flow. 	■ Inspect parts measurements and check visually.
5. No automatic operation. (faulty contacts.)	1) Faulty temperature sensor in freezer or refrigerator compartment. <ul style="list-style-type: none"> Faulty contact. Faulty temperature characteristics. 2) Refrigeration load is too much. <ul style="list-style-type: none"> Food. <ul style="list-style-type: none"> Too much food. Hot food. Frequent opening and closing. Cool air leak. Poor door close. — Partly opens. 3) Poor insulation. 4) Bad radiation. <ul style="list-style-type: none"> High ambient temperature. Space is secluded. 5) Refrigerant leak. 6) Inadequate of refrigerant. 7) Weak compressor discharging power. <ul style="list-style-type: none"> Different rating. Small capacity. 8) Fan does not work. 9) Button is positioned at "strong."	
6. Dew and ice formation.	1) Ice in freeezer compartment. <ul style="list-style-type: none"> External air inflow. — Rubber motor assembly direction(reverse). Door opens but not closes. <ul style="list-style-type: none"> Weak door closing power. Stopper malfunction. Door sag. Food hinders door closing. Gap around gasket. — Contraction, distortion, loose, door twisted, corner not fully inserted. Food vapor. — Storing hot food. — Unsealed food. 2) Condensation in the refrigerator compartment. <ul style="list-style-type: none"> Door opens but not closes. <ul style="list-style-type: none"> Insufficient closing. Door sag. Food hinders door closing. Gasket gap. 3) Condensation on liner foam. <ul style="list-style-type: none"> Cool air leak and transmitted. <ul style="list-style-type: none"> Not fully filled. <ul style="list-style-type: none"> Toop table part. Out plate R/L part. Flange gap. — Not sealed. Gasket gap. 	

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
6. Dew and ice formation.	<p>4) Dew on door.</p> <ul style="list-style-type: none"> Dew on the duct door. - Duct door heater is cut. Dew on the dispense recess. <ul style="list-style-type: none"> Recess Heater is cut. Duct door is open. / Foreign material clogging. Dew on the door surface. <ul style="list-style-type: none"> Not fully filled. <ul style="list-style-type: none"> Surface. Liquid shortage. Corner. Liquid leak. P/U liquid contraction. Dew on the gasket surface. <ul style="list-style-type: none"> Bad wing adhesion. <ul style="list-style-type: none"> Wing sag(lower part). Door liner shape mismatch. Corner. <ul style="list-style-type: none"> Too much notch. Broken. Home Bar heater is cut. <p>5) Water on the floor.</p> <ul style="list-style-type: none"> Dew in the refrigerator compartment. Defrosted water overflows. — Clogged discharging hose. Discharging hose — Evaporation tray located at wrong place. location. Tray drip. <ul style="list-style-type: none"> Damaged. Breaks, holes. Small Capacity. Position of drain. 	
7. Sounds	<p>1) Compressor compartment operating sounds.</p> <ul style="list-style-type: none"> Compressor sound inserted. <ul style="list-style-type: none"> Sound from machine itself. Sound from vibration. <ul style="list-style-type: none"> Restrainer. Rubber seat. <ul style="list-style-type: none"> Too hard. Distorted. Aged. Burnt. Stopper.— Bad Stopper assembly. <ul style="list-style-type: none"> Not fit (inner diameter of stopper). Tilted. Not Compressor base not connected. Bad welding compressor stand(fallen). Foreign materials in the compressor compartment. O.L.P. sound. — Chattering sound. Capacitor noise. — Insulation paper vibration. Pipe sound. <ul style="list-style-type: none"> Pipe contacts each other. — Narrow interval. No vibration damper. <ul style="list-style-type: none"> Damping rubber-Q. Damping rubber-S. Capillary tube unattached. 	

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
7. Sounds	<p>1) Compressor compartment operating sounds.</p> <ul style="list-style-type: none"> Transformer sound. <ul style="list-style-type: none"> Its own fault. — Core gap. Bad connection. — Correct screw connection. Drip tray vibration sound. <ul style="list-style-type: none"> Bad assembly. Distortion. Foreign materials inside. Back cover machine sound. <ul style="list-style-type: none"> Bad connection. Partly damaged. Condenser drain sound. <ul style="list-style-type: none"> Not connected. Bad pipe caulking. <p>2) Freezer compartment sounds.</p> <ul style="list-style-type: none"> Fan motor sound. <ul style="list-style-type: none"> Normal operating sound. Vibration sound. <ul style="list-style-type: none"> Aged rubber seat. Bad torque for assembling motor bracket. Sounds from fan contact. <ul style="list-style-type: none"> Fan guide contact. Shroud burr contact. Damping evaporator contact. Residual frost contact. <ul style="list-style-type: none"> Poor treatment Cord heater. Narrow evaporator interval. Unbalance fan sounds. <ul style="list-style-type: none"> Unbalance. <ul style="list-style-type: none"> Surface machining conditions. Fan distortion. Misshappen. Burr. Ice on the fan. — Air intake (opposite to motor rubber assembly.) Motor shaft contact sounds. <ul style="list-style-type: none"> Supporter disorted. Tilted during motor assembly. Resonance. Evaporator noise. <ul style="list-style-type: none"> Evaporator pipe contact. — No damping evaporator. Sound from refrigerant. — Stainless steel pipe shape in accumulator. Sound from fin evaporator and pipe during expansion and contraction. <p>3) Bowls and bottles make contact on top shelf.</p> <p>4) Refrigerator roof contact.</p> <p>5) Refrigerator side contact.</p> <p>6) Insufficient Lubricants on door hinge.</p>	

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
8. Faulty lamp (freezer and refrigerator compartment).	<ul style="list-style-type: none"> 1) Lamp problem. <ul style="list-style-type: none"> — Filament blows out. — Glass is broken. 2) Bad lamp assembly. <ul style="list-style-type: none"> — Not inserted. — Loosened by vibration. 3) Bad lamp socket. <ul style="list-style-type: none"> — Disconnection. <ul style="list-style-type: none"> — Bad soldering. — Bad rivet contact. — Short. <ul style="list-style-type: none"> — Water penetration. — Low water level in tray. — Bad elasticity of contact. — Bad contact(corrosion). 4) Door switch. <ul style="list-style-type: none"> — Its own defect. — Refrigerator and freezer switch is reversed. — Travel distance. — Bad connection. — Bad terminal contact. — P/U liquid leak.. 	
9. Faulty internal voltage(short).	<ul style="list-style-type: none"> 1) Lead wire is damaged. <ul style="list-style-type: none"> — Wire damage when assembling P.T.C. Cover. — Outlet burr in the bottom plate. — Pressed by cord heater. lead wire, evaporator pipe. 2) Exposed terminal. <ul style="list-style-type: none"> — Compressor Compartment terminal. - Touching other components. — Freezer compartment terminal. - Touching evaporator pipe. 3) Faulty parts. <ul style="list-style-type: none"> — Transformer. <ul style="list-style-type: none"> — Coil contacts cover. — Welded terminal parts contact cover. — Compressor. — Bad coil insulation. — Plate heater. — Melting fuse. — Sealing is broken. — Moisture penetration. — Cord heater. <ul style="list-style-type: none"> — Pipe damaged. — Moisture penetration. — Bad sealing. — Sheath heater. 	<p>■ Connect conduction and non-conduction parts and check with tester.</p> <p>Conduction: NG.</p> <p>Resistance∞: OK.</p>

TROUBLE DIAGNOSIS

CLAIMS.	CAUSES AND CHECK POINTS.	HOW TO CHECK
10. Structure, appearance and others.	<p>1) Door foam.</p> <ul style="list-style-type: none"> Sag. <ul style="list-style-type: none"> Weak torque of hinge connection. <ul style="list-style-type: none"> Bolt is loosened during transportaion. Not tightly fastened. Screw worn out . Weak gasket adhesion. <ul style="list-style-type: none"> Adhesion surface. Fixed tape. <ul style="list-style-type: none"> Not well fixed. Noise during operation. <ul style="list-style-type: none"> Hinge interference. <ul style="list-style-type: none"> Bigger door foam. Hinge-Pin tilted-Poor flatness. No washer. No grease and not enough quantity. Malfunction. <ul style="list-style-type: none"> Not closed Interference between door liner and inner liner. Refrigerator compartment is opened when freezer compartment is closed (faulty stopper). <ul style="list-style-type: none"> Stopper worn out. Bad freezer compartment door assembly. No stopper. <p>2) Odor.</p> <ul style="list-style-type: none"> Temperature of refrigerator compartment. <ul style="list-style-type: none"> High. <ul style="list-style-type: none"> Faulty damper control. Button is set at "weak". Door is open (interference by food). Deodorizer. <ul style="list-style-type: none"> No deodorizer. Poor capacity. Food Storage. <ul style="list-style-type: none"> Seal condition. Store special odorous food. Long term storage. Others. <ul style="list-style-type: none"> Odors from chemical products. 	

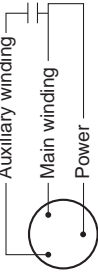
TROUBLE DIAGNOSIS

2. Faults

2-1. Power

Problems	Causes	Checks	Measures	Remarks
No power on outlet.	<ul style="list-style-type: none"> - Power cord cut. - Faulty connector insertion. - Faulty connection between plug and adapter. 	<ul style="list-style-type: none"> - Check the voltage with tester. - Check visually. - Check visually. 	<ul style="list-style-type: none"> - Replace the components. - Reconnect the connecting parts. - Reconnect the connecting parts. 	
Fuse blows out.	<ul style="list-style-type: none"> - Short circuit by wrong connection. - Low voltage products are connected to high voltage. - Short circuit by insects. - Electricity leakage. - High voltage. - Short circuit of components (tracking due to moisture and dust penetration). 	<ul style="list-style-type: none"> - Check the fuse with tester or visually. - Check the input volt are with tester (between power cord and products). - Check the resistance of power cord with tester (if it is 0Ω, it is shorted). 	<ul style="list-style-type: none"> - Find and remove the cause of problem(ex. short, high voltage, low voltage). - Replace with rated fuse. 	<ul style="list-style-type: none"> - Replace with rated fuse after confirming its specification. ■ If fuse blows out frequently, reconfirm the cause and prevent.

2-2. Compressor

Problems	Causes	Checks	Measures	Remarks
Compressor does not operate.	<ul style="list-style-type: none"> - Faulty PTC. - Compressor is frozen. 	<ul style="list-style-type: none"> - Check the resistance. Value:∞ is defective. - If compressor assembly parts are normal(capacitor, PTC, OLP), apply power directly to the compressor to force operation. 	<ul style="list-style-type: none"> - If resistance is infinite, replace it with new one. - If it is not infinite, it is normal. - Check other parts. - During forced operation: - Operates: Check other parts. - Not operate: Replace the frozen compressor with new one, weld, evacuate, and recharge refrigerant. 	<ul style="list-style-type: none"> • Refer to weld repair procedures.
		<p>OLP It starts as soon as it is contacted.</p> 		

TROUBLE DIAGNOSIS

2-3. Temperature

Problems	Causes	Checks	Measures	Remarks
High temperature in the freezer compartment.	Poor cool air circulation due to faulty fan motor.	<ul style="list-style-type: none"> - Lock — Check resistance with a tester. 0Ω: short. ∞Ω: cut. - Rotate rotor manually and check rotation. - Wire is cut. - Bad terminal contact: Check terminal visually. - Fan constraint. — Fan shroud contact: Confirm visually. — Fan icing: Confirm visually. 	<ul style="list-style-type: none"> - Replace fan motor. - Reconnect and reinsert. - Maintain clearance and remove ice (Repair and/or replace shroud if fan is constrained by shroud deformation). 	
	Faulty fan motor due to faulty door switch operation.	<ul style="list-style-type: none"> - Iced button (faulty) operation: Press button to check - Faulty button pressure and contact: Press button to check operation. - Door cannot press door switch button: Check visually. 	<ul style="list-style-type: none"> - Confirm icing causes and repair. - Replace door switch. - Door sag: fix door. - Door liner bent: replace door or attach sheets. 	
	Bad radiation conditions in compressor compartment.	<ul style="list-style-type: none"> - Check the clearance between the refrigerator and wall (50 mm in minimum). - Check dust on the grill in compressor compartment. - Check dust on the coils condenser. 	<ul style="list-style-type: none"> - Keep clearance between refrigerator and walls (minimum 50mm). - Remove dust and contaminants from grill for easy heat radiation. - Remove the dust with vacuum cleaner from the coils condenser while the refrigerator is off. 	<ul style="list-style-type: none"> - The fan may be broken if cleaning performs while the refrigerator is on.

TROUBLE DIAGNOSIS

2-4. Cooling

Problems	Causes	Checks	Measures	Remarks
High temperature in the freezer compartment.	Refrigerant leak.	<p><u>Check sequence</u></p> <ol style="list-style-type: none"> 1. Check the welded parts of the drier inlet and outlet and drier auxiliary in the compressor compartment (high pressure side). 2. Check the end of compressor sealing pipe (low pressure side). 3. Check silver soldered parts. (Cu + Fe / Fe + Fe). 4. Check bending area of wire condenser pipe in compressor compartment (cracks can happen during bending). 5. Check other parts (compressor compartment and evaporators in freezer compartment). 	Weld the leaking part, recharge the refrigerant.	Drier must be replaced.
	Shortage of refrigerant.	<p>Check frost formation on the surface of evaporator in the freezer compartment.</p> <ul style="list-style-type: none"> - If the frost forms evenly on the surface, it is OK. - If it does not, it is not good. 	<ul style="list-style-type: none"> - Find out the leaking area, repair, evacuate, and recharge the refrigerant. - No leaking, remove the remaining refrigerant, and recharge new refrigerant. 	Drier must be replaced.

TROUBLE DIAGNOSIS

Problems	Causes	Checks	Measures	Remarks
High temperature in the freezer compartment.	Cycle pipe is clogged.	<p>Check sequence.</p> <ol style="list-style-type: none"> 1. Check temperature of condenser manually. If it is warm, it is OK. If it is not, compressor discharging joints might be clogged. 2. Manually check whether hot line pipe is warm. If it is warm, it's OK. If it is not, condenser outlet weld joints might be clogged. 	<ul style="list-style-type: none"> - Heat up compressor discharging weld joints with touch, disconnect the pipes, and check the clogging. Remove the causes of clogging, weld, evacuate, and recharge the refrigerant. - If it's warm, it's OK. If it's not, condenser discharging line weld joints might be clogged. Disconnect with torch, remove the causes, evacuate, and recharge seal refrigerant. 	Drier must be replaced.
	Leak at loop pipe weld joint (discharge) in compressor.	<p>Check sequence.</p> <ol style="list-style-type: none"> 1. Manually check whether condenser is warm, It is not warm and the frost forms partly on the evaporator in the freezer compartment. 	Replace the compressor, weld, evacuate, and recharge refrigerant.	Drier must be replaced.
	Faulty cooling fan in the compressor compartment.	<p>Check sequence.</p> <ol style="list-style-type: none"> 1. Check cooling fan operation. 2. Check that cooling fan is disconnected from the motor. 	<ul style="list-style-type: none"> - Replace if motor does not operate. - If fan is disconnected, check fan damage and reassemble it. ■ Refer to fan motor disassembly and assembly sequence. 	

TROUBLE DIAGNOSIS

2-5. Defrosting failure

Problems	Causes	Checks	Measures	Remarks
No defrosting.	<p>Heater does not generate heat as the heating wire is cut or the circuit is shorted.</p> <p>1) Heating wire is damaged when inserting into the evaporator.</p> <p>2) Lead wire of heater is cut.</p> <p>3) Heating wire at lead wire contacts is cut.</p>	<p>1. Check the resistance of heater. 0Ω: Short. ∞Ω: Cut. Tens to thousands Ω: OK.</p> <p>2. Check the resistance between housing terminal and heater surface. 0Ω: Short. ∞Ω: Cut. Tens to thousands Ω: Short.</p>	<p>Heating wire is short and wire is cut.</p> <p>• Parts replacement: Refer to parts explanations.</p>	<p>Seal the lead wire with insulation tape and heat contraction tube if the cut lead wire is accessible to repair.</p>
	<p>Sucking duct and discharging hole are clogged:</p> <p>1. Impurities.</p> <p>2. Ice.</p>	<p>1. Confirm foreign materials. In case of ice, insert the copper line through the hole to check.</p> <p>2. Put hot water into the drain (check drains outside).</p>	<p>1) Push out impurities by inserting copper wire. (Turn off more than 3 hours and pour in hot water if frost is severe.)</p> <p>2) Put in hot water to melt down frost.</p> <p>3) Check the water outlet.</p> <p>4) Push the heater plate to sucking duct manually and assemble the disconnected parts.</p>	
	<p>Gap between Sucking duct and Heater plate (Ice in the gap).</p>	<p>1. Confirm in the Sucking duct.</p>	<p>1) Turn off the power, confirm impurities and ice in the gap, and supply hot water until the ice in the gap melts down.</p> <p>2) Push the Heater plate to drain bottom with hand and assemble the disconnected parts.</p>	
	<p>Wrong heater rating (or wrong assembly).</p>	<p>1. Check heater label.</p> <p>2. Confirm the capacity after substituting the resistance value into the formula.</p> $P = \frac{V^2}{R}$ <p>(V: Rated voltage of user country) (R: Resistance of tester [Ω])</p> <p>Compare P and label capacity. Tolerance: ±7%</p>	<p>Faults: replace.</p> <p>- How to replace: Refer to main parts.</p>	

TROUBLE DIAGNOSIS

Problems	Causes	Checks	Measures	Remarks
No defrosting	Melting fuse blows out. 1) Lead wire is cut. 2) Bad soldering.	- Check melting fuse with tester. - If 0Ω: OK. If ∞Ω: wire is cut.	Faulty parts: parts replacement. - Check wire color when measuring resistance with a tester.	
	Ice in the Sucking duct. 1) Icing by foreign materials in the duct. 2) Icing by cool air inflow through the gap of heater plate. 3) Icing by the gap of heater plate.	1. Check the inner duct with mirror. 2. Check by inserting soft copper wire into the duct (soft and thin copper not to impair heating wire).	1) Turn power off. 2) Raise the front side(door side), support the front side legs, and let the ice melt naturally. (If power is on, melt the frost by forced defrosting.) 3) Reassemble the heater plate.	
	Bad cool air inflow and discharge, and bad defrosting due to faulty contact and insertion (bad connector insertion into housing of heater, melting, fuse and motor fan).	1. Turn on power, open or close the door, check that motor fan operates (If it operates, motor fan is OK). 2. Disconnect parts in the refrigerator compartment, check the connection around the housing visually, defrost, and confirm heat generation on the heater. Do not put hands on the sheath heater. 3. Check the parts which have faults described in 1, 2 (mechanical model: disconnect thermostat from the assembly).	1) Check the faulty connector of housing and reassemble wrongly assembled parts. 2) If the parts are very damaged, remove the parts and replace it with a new one.	

TROUBLE DIAGNOSIS

2-6. Icing

Problems	Causes	Checks	Measures	Remarks
Icing in the refrigerator compartment. - Damper icing. - Pipe icing. - Discharging pipe icing.	1) Bad circulation of cool air. - Clogged intake port in the refrigerator compartment. - Sealing is not good. - Too much food is stored and clogs the discharge port. - Bad defrosting.	- Check the food is stored properly (check discharge and intake port are clogged). - Check icing on the surface of baffle and cool air path (pipe) after disassembling the container box. - Check icing at intake ports of freezer and refrigerator compartment.	- Be acquainted with how to use. - Sealing on connecting parts. - Check the damper and replace it if it has defects. - Check defrost. (After forced defrosting, check ice in the evaporator and pipes.)	- Check the defrost related parts if problem is caused by faulty defrosting.
	2) Faulty door or refrigerator compartment. - Faulty gasket. - Faulty assembly.	- Check gasket attached conditions. - Check door assembly conditions.	- Correct the gasket attachment conditions and replace it. - Door assembly and replacement.	- Replacement should be done when it cannot be repaired.
	3) Overcooling in the refrigerator compartment. - Faulty damper in the refrigerator compartment. - Faulty MICOM (faulty sensor)	- Check refrigerator compartment is overcooled (when button pressed on "weak"). - Check parts are faulty.	- Replace faulty parts.	
	4) Bad defrosting - Heater wire is cut. - Defective defrost sensor. - Defrosting cycle.	- Check frost on the evaporator after disassembling shroud and fan grille. - Check ice on intake port of freezer and refrigerator compartment.	- Check parts related to defrosting. - Check defrosting. (Check ice on the evaporator and pipe.)	- Moisture cannot frost on the evaporator but can be sucked into the refrigerator, being condensed and iced, interferes with cool air circulation, and suppresses sublimation.
	5) Customers are not familiar with this machine. - Door opens. - High temperature, high moisture, and high load.	- Check food interferes with door closing. - Check ice on the ceilings.	- Be acquainted with how to use.	

TROUBLE DIAGNOSIS

Problems	Causes	Checks	Measures	Remarks
Ice in the freezer compartment. - Surface of fan grille. - Wall of freezer compartment. - Cool air discharging port. - Basket(rack) area. - Food surface. - Icing in the shute.	1) Bad cooling air circulation. - Intake port is clogged in the freezer compartment. - Discharging port is Clogged. - Too much food is stored. - Bad defrosting.	- Check food storage conditions visually.(Check clogging at intake and discharging port of cooling air.) - Check food occupation ratio in volume(Less than 75%). - Check frost on the evaporator after dissembling shroud and fan grille. - Check icing at intake port of refrigerator compartment.	- Be acquainted with how to use. - Check defrost (Check ice on the evaporator and pipes after forced defrosting).	- Check the parts related to defrosting if the problem is caused by the faulty defrosting.
	2) Bad freezer compartment door - Faulty gasket - Faulty assembly	- Check gasket attachment conditions. - Check door assembly conditions.	- Correct the gasket attachment conditions and replace it. - Door assembly and replacement.	- Replace when it can not be repaired.
	3) Over freezing in the freezer compartment. - Faulty MICOM.	- Refrigerator operates pull down. (Check if it is operated intermittently) - The Temperature of freezer compartment is satisfactory, but over freezing happens in the refrigerator compartment even though the notch is set at "weak".	- Replace defective parts.	
	4) Bad defrosting. - Heater wire is cut. - Faulty defrost sensor. - Defrosting cycle	- Check frost on the evaporator after dissembling shroud and grille. - Check ice on the intake port in the refrigerator compartment.	- Check parts related to defrosting. - Check defrosting.(Check ice on the evaporator and pipes after forced defrosting.)	
	5) User is not familiar with how to use. - Door opens. - High moisture food(water) is stored.	- Check food holds door open. - Check ice on the ice tray.	- Be acquainted with how to use.	

TROUBLE DIAGNOSIS

2-7. Sound

Problems	Causes	Checks	Measures	Remarks
"Whizz" sound	1. Loud sound of compressor operation.	1.1 Check the level of the refrigerator. 1.2 Check the rubber seat conditions (sagging and aging).	1) Maintain horizontal level. 2) Replace rubber and seat if they are sagged and aged. 3) Insert rubber where hand contact reduces noise in the pipe. 4) Avoid pipe interference. 5) Replace defective fan and fan motor. 6) Adjust fan to be in the center of bell mouth of the fan guide. 7) Leave a clearance between interfering parts and seal gaps in the structures. 8) Reassemble the parts which make sound. 9) Leave a clearance if evaporator pipes and suction pipe touch freezer shroud.	
	2. Pipes resonant sound which is connected to the compressor.	2.1 Check the level of pipes connected to the compressor and their interference. 2.2 Check rubber inserting conditions in pipes. 2.3 Touch pipes with hands or screw -driver (check the change of sound).		
	3. Fan operation sound in the freezer compartment.	3.1 Check fan insertion depth and blade damage. 3.2 Check the interference with structures. 3.3 Check fan motor. 3.4 Check fan motor rubber insertion and aging conditions.		
	4. Fan operation sound in the compressor compartment.	4.1 Same as fan confirmation in the refrigerator. 4.2 Check drip tray leg insertion. 4.3 Check the screw fastening conditions at condenser and drip tray.		

TROUBLE DIAGNOSIS

Problems	Causes	Checks	Measures	Remarks
Vibration sound. ("Click")	1. Vibration of shelves and foods in the refrigerator. 2. Pipes interference and capillary tube touching in the compressor compartment. 3. Compressor stopper vibration. 4. Moving wheel vibration. 5. Other structure and parts vibration.	1-1. Remove and replace the shelves in the refrigerator 1-2. Check light food and container on the shelves. 2-1. Touch pipes in the compressor compartment with hands. 2-2 Check capillary tube touches cover back. 3-1 Check compressor stopper vibration. 4-1 Check vibration of front and rear moving wheels. 5-1 Touch other structures and parts.	1) Reassemble the vibrating parts and insert foam or cushion where vibration is severe. 2) Leave a clearance where parts interfere with each other. 3) Reduce vibration with rubber and restrainer if it is severe. (especially, compressor and pipe). 4) Replace compressor stopper if it vibrates severely.	
Irregular sound. ("Click").	1. It is caused by heat expansion and contraction of evaporator, shelves, and pipes in the refrigerator.	1-1 Check time and place of sound sources.	1) Explain the principles of refrigeration and that the temperature difference between operation and defrosting can make sounds. 2) If evaporator pipe contacts with other structures, leave a clearance between them (freezer shroud or inner case).	

TROUBLE DIAGNOSIS

Problems	Causes	Checks	Measures	Remarks
Sound "Burping" (almost the same as animals crying sound).	It happens when refrigerant expands at the end of capillary tube.	<ul style="list-style-type: none"> - Check the sound of refrigerant at the initial installation. - Check the sound when the refrigerator starts operation after forced defrosting. - Check the restrainer attachment conditions on the evaporator and capillary tube weld joints. 	<ul style="list-style-type: none"> - Check the restrainer attached on the evaporator and capillary tube weld joints and attach another restrainer. - If it is continuous and severe, insert capillary tube again (depth: 15±3mm) - Fasten the capillary tube to suction pipes or detach in the compressor compartment. - Explain the principles of freezing cycles. 	
Water boiling or flowing sound.	It happens when refrigerant passes orifice in accumulator internal pipes by the pressure difference between condenser and evaporator.	<ul style="list-style-type: none"> - Check the sound when compressor is turned on. - Check the sound when compressor is turned off. 	<ul style="list-style-type: none"> - Explain the principles of freezing cycles and refrigerant flowing phenomenon by internal pressure difference. - If sound is severe, wrap the accumulator with foam and restrainer. 	
Sound of whistle when door closes.	When door closes, the internal pressure of the refrigerator decreases sharply below atmosphere and sucks air into the refrigerator, making the whistle sound.	<ul style="list-style-type: none"> - Check the sound by opening and closing the refrigerator or freezer doors. 	<ul style="list-style-type: none"> - Broaden the cap of discharge hose for defrosting in the compressor compartment. - Seal the gap with sealant between out and inner cases of hinge in door. 	

TROUBLE DIAGNOSIS

2-8. Odor

Problems	Causes	Checks	Measures	Remarks
Food Odor.	Food (garlic, kimchi, etc)	<ul style="list-style-type: none"> - Check the food is not wrapped. - Check the shelves or inner wall are stained with food juice. - Check the food in the vinyl wraps. - Check food cleanliness. 	<ul style="list-style-type: none"> - Dry deodorizer in the shiny and windy place. - Store the food in the closed container instead of vinyl wraps. - Clean the refrigerator and set button at "strong" . 	
Plastic Odor.	Odors of mixed food and plastic odors.	<ul style="list-style-type: none"> - Check wet food is wrapped with plastic bowl and bag. - It happens in the new refrigerator. 	<ul style="list-style-type: none"> - Clean the refrigerator. - Persuade customers not to use plastic bag or wraps with wet food or odorous foods. 	
Odor from the deodorizer.	Odor from the old deodorizer.	<ul style="list-style-type: none"> - Check the deodorizer odors. 	<ul style="list-style-type: none"> - Dry the deodorizer with dryer and then in the shiny and windy place. - Remove and replace the deodorants. 	*Deodorizer : option

TROUBLE DIAGNOSIS

2-9. Micom

Problems	Symptom	Causes		Checks	Measures	Remarks
Bad PCB electric power.	All display LEDS are off.	Bad connection between Main PCB and display circuit.	Bad connector connection from main PCB to display PCB.	Visual check on connector connection.	Reconnect connector.	
		Defective PCB trans.	PCB Trans winding is cut.	Check resistance of PCB Trans input and output terminals with a tester. (If resistance is infinity, trans winding is cut).	Replace PCB Trans or PCB.	Applicable to model without dispenser.
			PCB Trans temperature fuse is burnt out.			
		Defective PCB electric circuit parts.	Defective regulator IC (7812, 7805).	Check voltage at input/output terminals.	Replace regulator.	Refer to electric circuit in circuit explanation.
			PCB electric terminal fuse is burnt out.	Check fuse in PCB electric terminal with a tester.	Replace PCB fuse.	
Abnormal display LED operation		Bad connection between Main PCB and display circuit.	STR Parts are damaged.	Check if STR No. 2 and 3 pins are cut when power is off.	Replace parts.	Applicable to model with dispenser.
			Lead Wire connecting main PCB and display PCB is cut or connector terminal connection is bad.	Check Lead Wire terminals connecting Main PCB and display PCB with a tester.	Reconnect Lead Wire and directly connect defective contact terminal to Lead Wire.	
		Defective LED module.	Defective LED.	Check if all LEDs are on when Main PCB Test switch is pressed (or when both freezer key and power freezer key are pressed at the same time for more than one second.)	Replace display PCB.	Refer to display circuit in circuit explanation.

TROUBLE DIAGNOSIS

Problems	Symptom	Causes		Checks	Measures	Remarks
Bad cooling.	Freezer temperature is high.	Compressor does not start.	Compressor Lead Wire is cut.	Check compressor Lead Wire with a tester.	Reconnect Lead Wire.	
			Defective compressor driving relay.	Measure voltage at PCB CON1 (5&7) after pressing main PCB test switch once. It is OK if voltage is normal.	Replace relay (RY1) or PCB.	Refer to load driving circuit in circuit explanation.
		Defective freezer sensor.	Defective Freezer sensor parts.	Check resistance of freezer sensor with a tester.	Replace freezer sensor.	Refer to resistance characteristics table of sensor in circuit explanation.
			Freezer sensor is substituted for other sensor.	Confirm the color of sensor in circuits (main PCB sensor housing).	Repair main PCB sensor housing	
		Defective freezer fan motor.	Fan motor lead wire is cut.	Check fan motor lead wire with a tester.	Reconnect lead wire.	
			<ul style="list-style-type: none"> Defective door switch (freezer, refrigerator, home bar). Defective fan motor. Defective fan motor driving relay. 	Measure the voltage between PCB power blue line and fan motor after pressing test switch of Main PCB. If the voltage is normal, it is OK.	<ul style="list-style-type: none"> Replace door switch (freezer, refrigerator and home bar). Replace fan motor. 	Refer to load driving circuits in circuit explanation.
		Faulty defrost.		Refer to faulty defrost items in trouble diagnosis functions.		Refer to trouble diagnosis function.

TROUBLE DIAGNOSIS

Problems	Symptom	Causes		Checks	Measures	Remarks
Bad cooling	Wrong Refrigerator temperature.	Defective AC Damper.	Check AC damper motor and reed switch and lead wire are cut.	Check if AC damper motor and reed switch lead wire are cut with a tester.	Reconnect lead wire.	
			Check AC damper part.	Refer to AC damper in parts repair guide.	Replace AC damper or refrigerator control box Assembly.	
			Check AC damper Motor driving relay in PCB.	Refer to AC damper in parts repair guide.	Replace relay or PCB.	Refer to single motor damper driving circuits in circuit explanation.
			Foreign materials in AC damper baffles	Check AC damper baffle visually.	Remove foreign materials.	
	Defective refrigerator sensor	Defective refrigerator sensor parts.	Ice formation on AC damper baffles	Check if AC damper Heater wire is cut with a tester.	Replace AC damper or refrigerator control Box Assembly.	
				Check the resistance of refrigerator sensor with a tester.	Replace refrigerator sensor.	Refer to sensor resistance characteristic table in circuit explanation.
			Refrigerator sensor is substituted for other sensor.	Check the sensor color in the circuit. (main PCB sensor housing.)	Repair main PCB sensor housing.	
			Defective refrigerator sensor assembly condition.	Check if refrigerator sensor is not fixed at cover sensor but inner case visually.	Fix again the refrigerator sensor.	

TROUBLE DIAGNOSIS

Problems	Symptom	Causes	Checks	Measures	Remarks
Bad defrost.	Defrost is not working.	Defrost lead wire is cut.	Check if defrost lead wire is cut with a tester.	Reconnect Lead Wire.	
		Defective defrost driving relay.	Check the voltage of CON2 with a tester after pressing main PCB test switch twice. If the voltage is normal then it is OK.	Replace relay or PCB.	Refer to load driving conditions check in circuit explanation.
		Defective defrost sensor parts.	Check the resistance of defrost sensor with a tester.	Replace defrost sensor.	Refer to sensor resistance characteristic table of circuit explanation.
Defective buzzer	Buzzer continuously rings or door opening alarm does not work.	Defective connecting lead wire from main PCB to door switch.	Check lead wire related to door switch with a tester.	Repair lead wire.	
		Defective door switch parts.	Refer to door switch in parts repair guide.	Replace door switch.	
Defective display button	Buzzer does not ring and key does not sense even button is pressed.	Key input wire is cut or bad connector terminal contact in main PCB and display PCB connecting lead wire.	Check input wire with a tester.	Reconnect lead wire and replace or directly connect bad contact terminal to lead wire.	Refer to display circuit in circuit explanation.
		Key is continuously depressed due to structural interference.	Disassemble frame display and confirm visually.	Adjust or replace interfering structures.	

TROUBLE DIAGNOSIS

Problems	Symptom	Causes	Checks	Measures	Remarks
Defective display button.	Buzzer rings but key does not sense even button is pressed.	Trouble mode indication.	Check trouble diagnosis function.	Repair troubles	Refer to mode indication in function explanations.
Door Buzzer	Buzzer continuously rings or door opening alarm does not work.	Defective connecting lead wire from main PCB to door switch.	Check lead wire associated with door switch.	Repair lead wire.	Check model with dispenser.
		Defective freezer compartment door switch parts.	Refer to door switch in parts repair guide.	Replace Freezer compartment door switch.	
Bad water/ice dispenser.	Ice and water are not dispensed.	Defective connecting lead wire from Main PCB to lever switch.	Check Lead Wire associated with lever switch with a tester.	Repair lead wire.	
		Defective lever switch parts	Refer to door switch in parts repair guide.	Replace lever switch.	
		Defective photo coupler IC parts.	Check voltage change at photo coupler output terminals with lever switch pressed. It is OK if voltage change is between 0V - 5V.	Replace photo coupler IC or PCB.	
		Defective relay associated with ice dispense (geared motor, cube and dispenser solenoid).	Check relay with a tester.	Replace defective relay.	
		Defective parts associated with ice dispense (geared motor, cube and dispenser solenoid).	Check resistance of parts with a tester.	Replace defective parts.	
		Defective relay associated with water dispense.	Check relay with a tester	Replace defective relay.	
		Defective parts associated with water dispenser.	Check resistance of parts with a tester.	Replace defective parts.	

TROUBLE DIAGNOSIS

3. Cooling Cycle Heavy Repair









3-1. The Heavy Repair Standards for Refrigerator with R134a Refrigerant

NO.	Items		Unit	Standards	Purposes	Remarks
1	Pipe and piping system opening time.		Min.	Pipe:within 1 hour. Comp:within 10 minutes. Drier:within 20 minutes.	To protect Moisture Penetration.	The opening time should be reduced to a half of the standards during rain and rainy seasons (the penetration of water into the pipe is dangerous).
2	Welding.		Nitrogen Pressure.	Weld under Nitrogen atmosphere (N ₂ pressure: 0.1~0.2 kg/cm ²)	To protect oxide scale formation.	<ul style="list-style-type: none"> - Refet to repair note in each part. - R134a refrigerant is more susceptible to leaks than R12 and requires more care during welding. - Do not apply force to pipes before and after welding to protect pipe from cracking.
3	N ₂ sealed parts.		Confirm N ₂ leak.	Confirm air leaking sounds when removing rubber cap. Sound:usable No sound:not usable	To protect moisture penetration.	- In case of evaporator parts, if it doesn't noise when removing rubber cap blow dry air or N ₂ gas for more than 1 min use the parts.
4	Refrigeration Cycle.	Evacuation time	Min.	More than 40 minutes.	To remove moisture.	Note:Only applicable to the model equipped with reverse flow protect plate.
		Vacuum degree	Torr	Below 0.03(ref)		
		Vacuum	EA	High and low Pressure sides are evacuated at the same time for models above 200 l		Vaccum efficiency can be improved by operating compressor during evacuation.
		Vacuum piping	EA	Use R134a exclusive manifold.	To protect mixing of mineral and ester oils.	The rubber pipes for R12 refrigerant shall be melted when they are used for R134a refrigerant(causes of leak).
		Pipe coupler	EA	Use R134a cxclusive.	To protect R12 Refrigerant mixing.	
		Outlet (Socket) Plug		R134a exclusive.		
5	Refrigerant weighing.		EA	Use R134a exclusively. Weighing allowance:±5g Note:Winter:-5g Summer:+5g	Do not mix with R12 refrigerant.	<ul style="list-style-type: none"> - Do not weight the refrigerant at too hot or too cold an area.(25°C is adequate.) - Use copper bombe Socket:2SV Plug: 2PV R134a Note:Do not burn O-ring (rubber) during welding.
6	Drier replacement.			-Use R134a exclusively for R134a refrigerator -Use R12 exclusively for R12 refrigerator -Replace drier whenever repairing refrigerator cycle piping.	To remove the moisture from pipe.	
7	Leak check.			-Do not use soapy water for check. it may be sucked into the pipe by.	Detect refrigerant leak area.	<ul style="list-style-type: none"> -Check oil leak at refrigerant leak area. Use electronic leak detector if oil leak is not found. -The electronic leak detector is very sensitive to halogen gas in the air. It also can detect R141b in urethane. Please practice, therefore, many times before use.

NOTE) Please contact Songso company on +82-53-554-2067 if you have inquiry on heavy repair special facility.

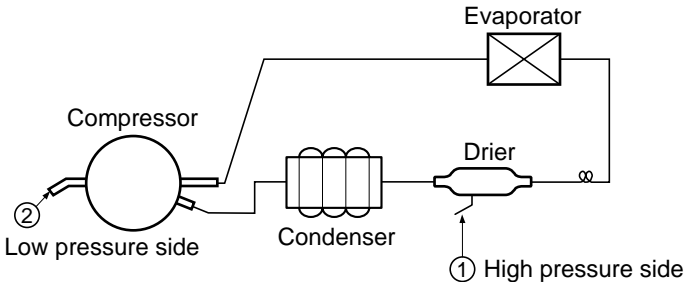
TROUBLE DIAGNOSIS

3-2. Summary Of Heavy Repair

Process	Contents	Tools
 Trouble diagnosis		
 Remove refrigerant Residuals	<ul style="list-style-type: none"> - Cut charging pipe ends and discharge refrigerant from drier and compressor. 	Filter, side cutters
 Parts replacement and welding	<ul style="list-style-type: none"> - Use R134a oil and refrigerant for compressor and drier - Confirm N₂ sealing and packing conditions before use. Use good one for welding and assembly. - Weld under nitrogen gas atmosphere.(N₂ gas pressure: 0.1-0.2kg/cm²). - Repair in a clean and dry place. 	Pipe Cutter, Gas welder, N ₂ gas
 Vacuum	<ul style="list-style-type: none"> - Evacuate for more than forty minutes after connecting manifold gauge hose and vacuum pump to high (drier) and low (compressor refrigerant discharging parts) pressure sides. - Evacuation Speed:113//min. 	Vacuum pump(R134a exclusively), Manifold gauge.
 Refrigerant charging and charging inlet welding	<ul style="list-style-type: none"> - Weigh and control the allowance of R134a bombe in a vacuum conditions to be ± 5 g with electronic scales and charge through compressor inlet (Charge while refrigerator operates). - Weld carefully after inlet pinching. 	R134a exclusive bombe(mass cylinder), refrigerant(R134a) manifold gauge, electronic scales, punching off flier, gas welding machine
 Check refrigerant leak and cooling capacity	<ul style="list-style-type: none"> - Check leak at weld joints. <ul style="list-style-type: none"> Minute leak: Use electronic leak detector Big leak: Check visually or fingers. Note:Do not use soapy water for check. - Check cooling capacity <ol style="list-style-type: none"> ① Check radiator manually to see if warm. ② Check hot line pipe manually to see if warm. ③ Check frost formation on the whole surface of the evaporator. 	Electronic Leak Detector, Driver(Ruler).
 Compressor compartment and tools arrangement	<ul style="list-style-type: none"> - Remove flux from the silver weld joints with soft brush or wet rag.(Flux may be the cause of corrosion and leaks.) - Clean R134a exclusive tools and store them in a clean tool box or in their place. 	Copper brush, Rag, Tool box
 Transportation and installation	<ul style="list-style-type: none"> - Installation should be conducted in accordance with the standard installation procedure.(Leave space of more than 5 cm from the wall for compressor compartment cooling fan mounted model.) 	

TROUBLE DIAGNOSIS

3-3. Precautions During Heavy Repair

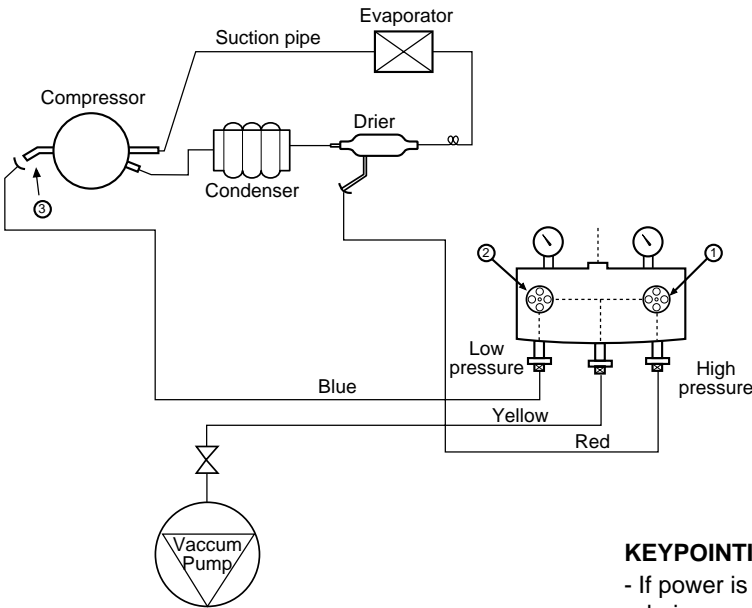
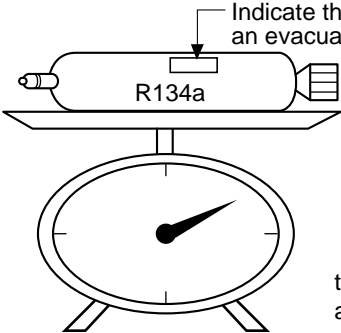
Items	Precautions
1. Use of tools.	1) Use special parts and tools for R134a.
2. Removal of retained refrigerant.	<p>1) Remove retained refrigerant more than 5 minutes after turning off a refrigerator. (If not, oil will leak inside.)</p> <p>2) Remove retained refrigerant by cutting first high pressure side (drier part) with a nipper and then cut low pressure side. (If the order is not observed, oil leak will happen.)</p> 
3. Replacement of drier.	1) Be sure to replace drier with R134a only when repairing pipes and injecting refrigerant.
4. Nitrogen blowing welding.	1) Weld under nitrogen atmosphere in order to prevent oxidation inside a pipe. (Nitrogen pressure : 0.1~0.2 kg/cm ² .)
5. Others.	<p>1) Nitrogen or refrigerant R134a only should be used when cleaning inside of cycle pipes inside and sealing.</p> <p>2) Check leakage with an electronic leakage tester.</p> <p>3) Be sure to use a pipe cutter when cutting pipes.</p> <p>4) Be careful not the water let intrude into the inside of the cycle.</p>

TROUBLE DIAGNOSIS

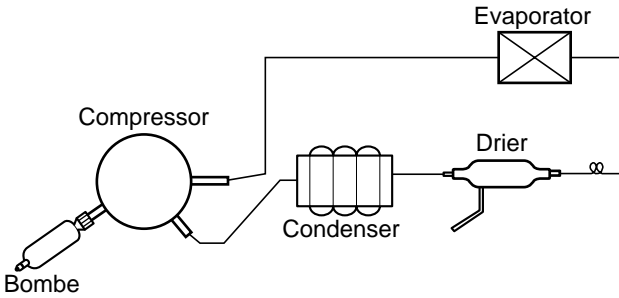
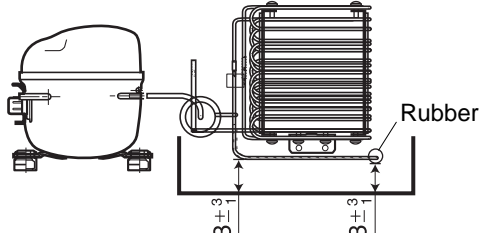
3-4. Practical Work For Heavy Repair

Items	Precautions
<p>1. Removal of residual refrigerant.</p>	<div data-bbox="479 357 1096 638"> </div> <div data-bbox="1156 427 1442 576"> <p>KEYPOINTING Observe the sequence for removal of refrigerant. (If not, compressor oil may leak.)</p> </div> <div data-bbox="479 666 1421 815"> <ol style="list-style-type: none"> 1) Remove residual refrigerant more than 5 minutes later after turning off the refrigerator. (If not, compressor oil may leak inside.) 2) Remove retained refrigerant slowly by cutting first high pressure side (drier part) with a nipper and then cut low pressure side. </div>
<p>2. Nitrogen blowing welding.</p>	<div data-bbox="487 868 1104 1149"> </div> <div data-bbox="1156 910 1442 1087"> <p>KEYPOINTING Welding without nitrogen blowing produces oxidized scales inside a pipe, which affect on performance and reliability of a product.</p> </div> <div data-bbox="479 1215 1474 1485"> <p>When replacing a drier: Weld ① and ② parts by blowing nitrogen(0.1~0.2kg/cm²) to high pressure side after assembling a drier.</p> <p>When replacing a compressor: Weld ① and ② parts by blowing nitrogen to the low pressure side.</p> <p>Note) For other parts, nitrogen blowing is not necessary because it does not produce oxidized scales inside pipe because of its short welding time.</p> </div>
<p>3. Replacement of drier.</p>	<div data-bbox="495 1555 1047 1779"> </div> <div data-bbox="1156 1566 1442 1768"> <p>KEYPOINTING Be sure to check the inserted length of capillary tube when it is inserted. (If too much inserted, a capillary tube is clogged by a filter.)</p> </div> <div data-bbox="479 1825 1453 1932"> <p>Inserting a capillary tube Measure distance with a ruler and put a mark(12^{+3/-0})on the capillary tube. Insert tube to the mark, and weld it</p> </div>

TROUBLE DIAGNOSIS

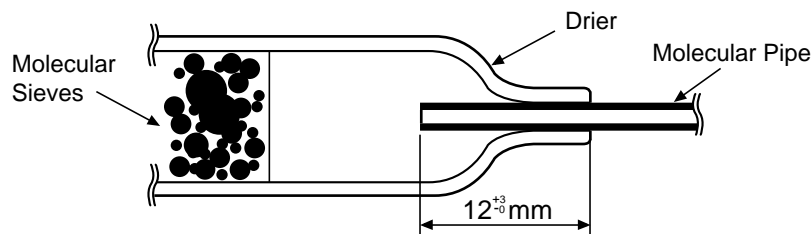
Items	Precautions
4.Vacuum degassing.	<div>  </div> <div> <p>Pipe Connection</p> <p>Connect a red hose to the high pressure side and a blue hose to the low pressure side.</p> <p>Vacuum Sequence</p> <p>Open ①, ② valves and evacuate for 40 minutes. Close valve ①.</p> </div> <div> <p>KEYPOINTING</p> <ul style="list-style-type: none"> - If power is applied during vacuum degassing, vacuum degassing shall be more effective. - Operate compressor while charging refrigerant. (It is easier and more certain to do like this.) </div>
5.Refrigerant charging.	<div> <p>Charging sequence</p> <ol style="list-style-type: none"> 1) Check the amount of refrigerant supplied to each model after completing vacuum degassing. 2) Evacuate bombe with a vacuum pump. 3) Measure the amount of refrigerant charged. <ul style="list-style-type: none"> - Measure the weight of an evacuated bombe with an electronic scale. - Charge refrigerant into a bombe and measure the weight. Calculate the weight of refrigerant charged into the bombe by subtracting the weight of an evacuated bombe. </div> <div>  </div> <div> <p>KEYPOINTING</p> <ul style="list-style-type: none"> - Be sure to charge the refrigerant at around 25°C. - Be sure to keep -5g in the winer and +5g in summer </div> <div> <p>Calculation of amount of refrigerant charged</p> <p>the amount of refrigerant charged= a weight after charging - a weight before charging (a weight of an evacuated cylinder)</p> </div>

TROUBLE DIAGNOSIS

Items	Precautions
	 <p>4) Refrigerant Charging Charge refrigerant while operating a compressor as shown above.</p> <p>5) Pinch a charging pipe with a pinch-off plier after completion of charging.</p> <p>6) Braze the end of a pinched charging pipe with copper brazing and take a gas leakage test on the welded parts.</p>
6. Gas-leakage test	* Take a leakage test on the welded or suspicious area with an electronic leakage tester.
7. Pipe arrangement in each cycle	<p>Check each pipe is placed in its original place before closing a cover back-M/C after completion of work. Particularly control the size of Joint Drain Pipe</p> 

3-5. Standard Regulations For Heavy Repair

- 1) Observe the safety precautions for gas handling.
- 2) Use JIG (or wet towel) in order to prevent electric wires from burning during welding. (In order to prevent insulation break and accident.)
- 3) The inner case shall be melted and insulation material (polyurethane) shall be burnt if not cared during welding inner case parts.
- 4) The copper pipe shall be oxidized by overheating if not cared during welding.
- 5) Not allow the aluminum pipes to contact to copper pipes. (In order to prevent corrosion.)
- 6) Observe that the inserted length of a capillary tube into a drier should be 12^{+3}_{-0} mm.

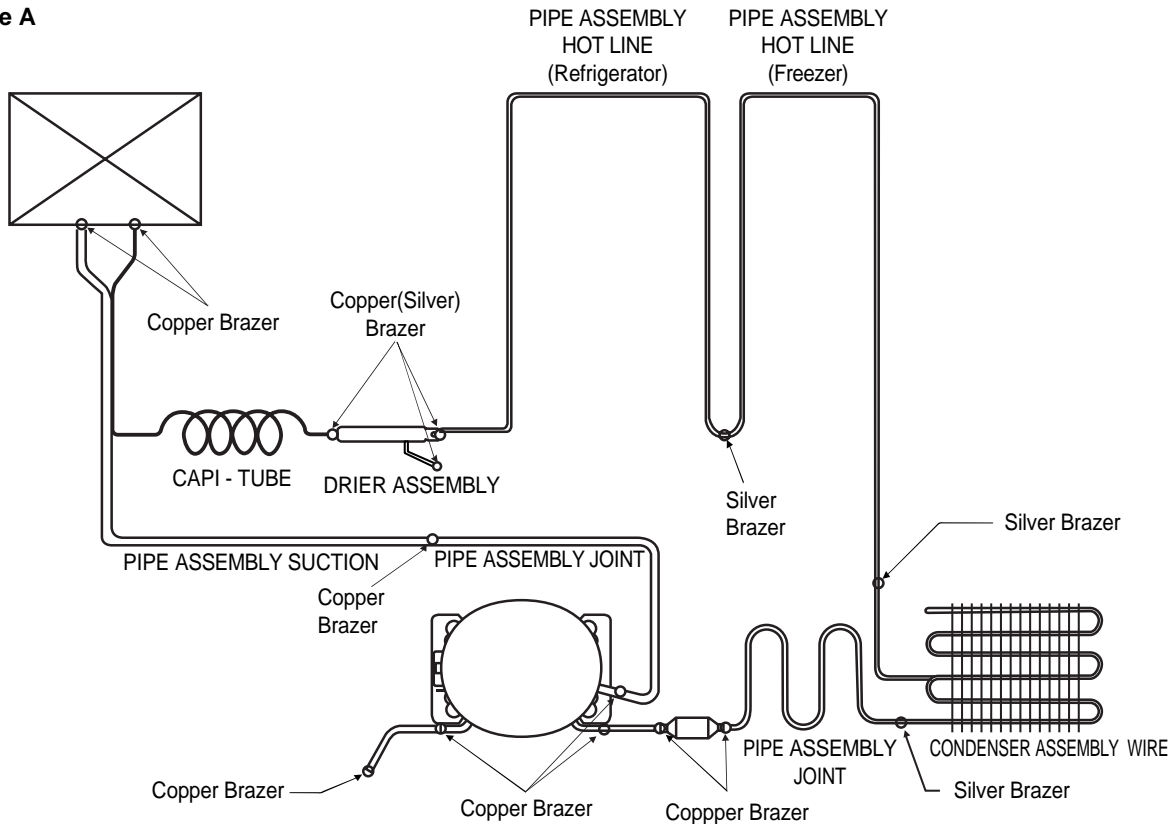


- 7) Make sure that the inner diameter should not be distorted while cutting a capillary tube.
- 8) Be sure that a suction pipe and a filling tube should not be substituted each other during welding. (High efficiency pump.)

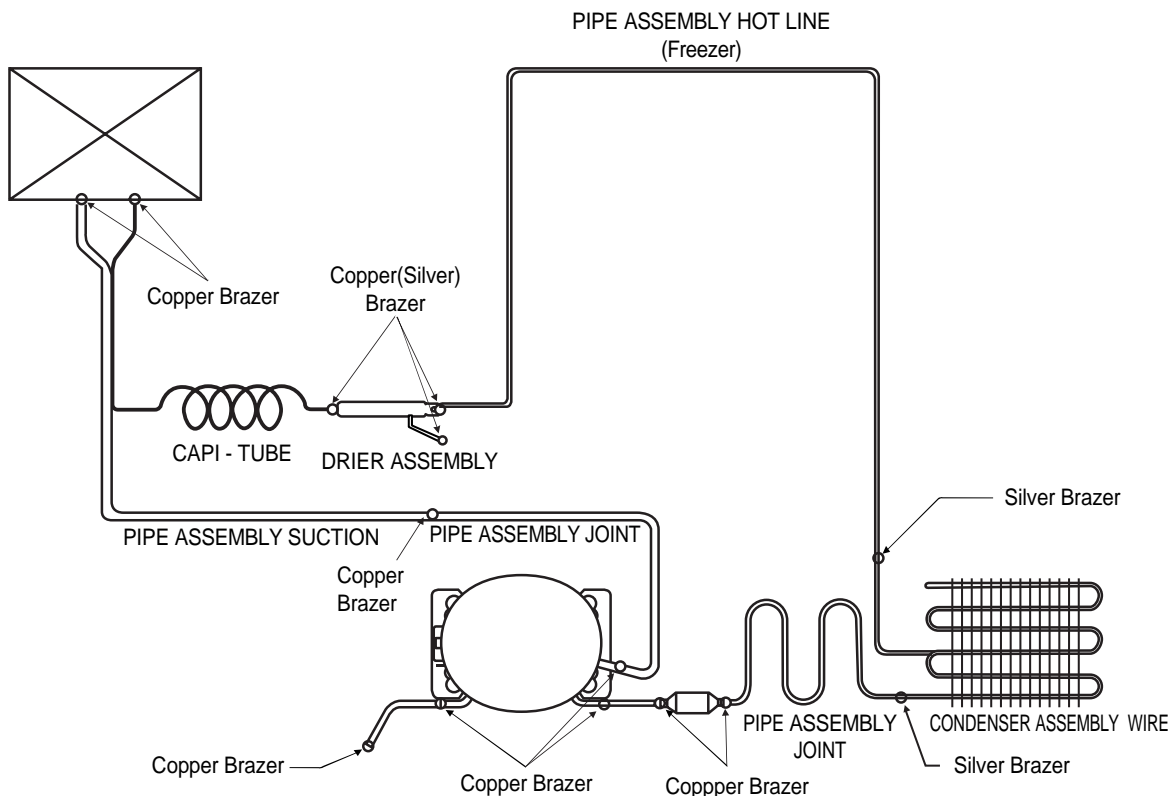
TROUBLE DIAGNOSIS

3-6. Brazing Reference Drawings

1) Type A



2) Type B



TROUBLE DIAGNOSIS

4. HOW TO DEAL WITH CLAIMS

4-1. Sound

Problems	Checks and Measures
"Whizz" sounds	<ul style="list-style-type: none">■ Explain general principles of sounds.<ul style="list-style-type: none">• All refrigerator when functioning properly have normal operating sound. The compressor and fan produce sounds. There is a fan in the freezer compartment which blows cool air to freezer and refrigerator compartments. "Whizz" sounds are heard when the air passes through the narrow holes into the freezer and refrigerator compartments.■ Cooling Fan sound in the compressor compartment.<ul style="list-style-type: none">• There is a fan on the back of the refrigerator, which cools the compressor compartment. If there is a small space between the refrigerator and the wall, the air circulation sounds may be noticeable.■ Noise of Compressor.<ul style="list-style-type: none">• This operating sound happens when the compressor compresses the refrigerant. The compressor rotates at 3600RPM. The sound of compressor operation becomes louder as the refrigerator capacity increases.
"Click" sounds	<ul style="list-style-type: none">■ Explain the principles of temperature change.<ul style="list-style-type: none">• The sounds happens when pipes and internal evaporator in the refrigerator compartment expand and contract as the temperature changes during the refrigerator operation. This sound also happens during defrosting, twice a day, when the ice on the evaporator melts.
"Clunk" sound	<ul style="list-style-type: none">■ Explain that it comes from the compressor when the refrigerator starts.<ul style="list-style-type: none">• When the refrigerator operates, the piston and motor in the compressor rotate at 3600RPM. This sound is caused by the vibration of motor and piston when they start and finish their operation. This phenomena can be compared with that of cars. When the car engine ignites and starts to rotate, the loud sound becomes gradually quiet. When the engine stops, it stops with vibration.
Vibration sound	<ul style="list-style-type: none">■ Check the sound whether it comes from the pipes vibration and friction.<ul style="list-style-type: none">• Insert rubber or leave a space between pipes to avoid the noise.• Fix the fan blade if the noise is due to the collision of fan and shroud.• Fix the drip tray if it is loosened.■ Sound depends on the installation location.<ul style="list-style-type: none">• Sound becomes louder if the refrigerator is installed on a wooden floor or near a wooden wall. Move it to the another location.• If the refrigerator is not leveled properly, a small vibration can make a loud sound. Please adjust the level of the refrigerator.

TROUBLE DIAGNOSIS

Problems	Checks and Measures
Sounds of water flowing	<p>■ Explain the flow of refrigerant.</p> <ul style="list-style-type: none"> When the refrigerator stops, the water flowing sound happens. This sound happens when the liquid or vapor refrigerant flows from the evaporator to compressor.
"Click" sounds	<p>■ Explain the characteristics of moving parts.</p> <ul style="list-style-type: none"> This noise comes from the MICOM controller's switch on the top of the refrigerator when it is turned on and off.
<p>Noise of ice maker operation (applicable to model with ice maker).</p> <ul style="list-style-type: none"> Noise produced by ice dropping and hitting ice bank. Noise from motor sounds "Whizz". 	<p>■ Explain the procedure and principles of ice maker operation.</p> <ul style="list-style-type: none"> Automatic ice maker repeats the cycle of water supplying → icemaking → ice ejection. When water is supplied, the water supply valve in the machine room makes sounds like "Whizz" and water flowing also makes sound. When water freezes to ice, freezing sounds such as "click, click" are heard. When ice is being ejected, sounds like "Whizz" produced by a motor to rotate an ice tray and ice dropping and hitting ice bank sounds are also heard.
Noise when supplying water.	<p>■ Explain the principles of water supplied to dispenser.</p> <ul style="list-style-type: none"> When the water supply button in the dispenser is pressed, the water supply valve in the compressor compartment opens and let the water flow to the water tank in the lower part of the refrigerator compartment. The water is dispensed by this pressure. When this happens, motor sound and water flowing sound are heard.
Noise when supplying ice.	<p>■ Explain the principles of ice supply and procedure of crushed ice making in a dispenser.</p> <ul style="list-style-type: none"> When ice cube button is pressed, ice stored in the ice bank is moved by a Helix Pusher and dispensed. If crushed ice button is pressed, the cube ice is crushed. When this happens, ice crushing and hitting ice bank sounds are heard.

TROUBLE DIAGNOSIS

4-2. Measures for Symptoms on Temperature

Problems	Checks and Measures
Refrigeration is weak.	<p>■ Check temperature set in the temperature control knob.</p> <ul style="list-style-type: none"> Refrigerator is generally delivered with the button set at “normal use” (MID). But customer can adjust the temperature set depending on their habit and taste. If you feel the refrigeration is weak, then set the temperature control button at “strong” position. If you adjust the button in the freezer compartment as well, the refrigeration is stronger than adjusting refrigerator only.
The food in the chilled drawer is not frozen but defrosted	<p>■ The chilled drawer does not freeze food.</p> <ul style="list-style-type: none"> Use chilled drawer for storing fresh meat or fish for short periods. For storing for a long periods or freezing food, use a freezer compartment. It is normal that frozen foods thaw above the freezing temperature (in the chilled drawer).
Refrigerator water is not cool.	<p>■ Check the water storage location.</p> <ul style="list-style-type: none"> If water is kept in the door rack, please ask to keep it in the refrigerator compartment shelf. It will then become cooler.
Ice cream softens.	<p>■ Explain the characteristics of ice cream.</p> <ul style="list-style-type: none"> The freezing point of ice cream is below -15°C. Therefore ice cream may melt if it is stored in the door rack. Store ice cream in a cold place or set the temperature control button of a freezer at “strong” position.
Refrigeration is too strong.	<p>■ Check the position of temperature control button.</p> <ul style="list-style-type: none"> Check if refrigeration is strong in whole area of the refrigerator or partly near the outlet of the cooling air. If it is strong in whole area, set the control button at “weak”. If it is strong only near the outlet of cool air, keep food (particularly wet and easy to frozen such as bean curd and vegetables) away from the outlet.
Vegetables are frozen.	<p>■ Check the vegetables storage.</p> <ul style="list-style-type: none"> If vegetables are stored in the refrigerator shelf or chilled drawer instead of vegetable drawer, they will be frozen. Set the control button at “weak” if they are also frozen in the vegetable drawer.
The food stored at inside of the shelf freezes even the control button is set at “MID”.	<p>■ Check if food is stored near the outlet of the cooling air.</p> <ul style="list-style-type: none"> The temperature at cooling air outlet is always below the freezing point. Do not store food near the outlet of the cooling air as it block the air circulation. And do not block the outlet. If the outlet of the cooling air is blocked, the refrigerator compartment will not be cooled.

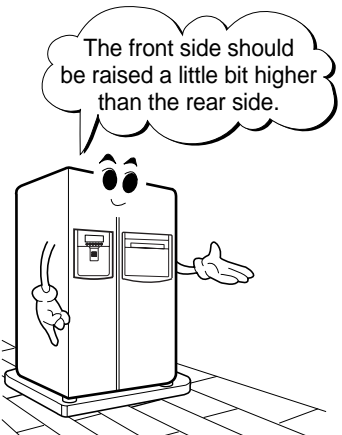
TROUBLE DIAGNOSIS

4-3. Odor and Frost

Problems	Checks and Measures
Odor in the refrigerator compartment.	<ul style="list-style-type: none">■ Explain the basic principles of food odor.<ul style="list-style-type: none">• Each food has its own peculiar odor. Therefore it is impossible to prevent or avoid food odor completely when food is stored in the completely sealed refrigerator compartment. Deodorizer can absorb some portions of the odor but not completely. The intensity of odor depends on refrigerator conditions and environments.■ Check the temperature control button and set at “strong”.<ul style="list-style-type: none">• Clean inside of the refrigerator with detergent and remove moisture. Dry inside the refrigerator by opening the door for about 3 or 4 hours and then set the temperature control button at “strong”.
Frost in the freezer compartment	<ul style="list-style-type: none">■ Explain the basic principles of frost formation.<ul style="list-style-type: none">• The main causes for frosting:<ul style="list-style-type: none">- Door was left open.- Air penetration through the gasket- Too frequent door opening. (parties. etc.)- Hot foods are stored before they are cooled down. The temperature of freezer is -19°C. if temperature is set at “MID”. If hot air comes into the refrigerator, fine frost forms as cold air mixes with hot air. If this happens quite often, much frost forms inside of the refrigerator. If the door is left open in Summer, ice may form inside of the refrigerator.
Frost in ice tray.	<ul style="list-style-type: none">■ Explain basic principles of frost formation.<ul style="list-style-type: none">• When ice tray with full of water is put into a freezer compartment, the water evaporates. If cool air fan operates, the moisture attached to the jaw (protruded part) of ice mold shall freeze and form frost. If warm water was put into the ice mold, the situation will become worse.

TROUBLE DIAGNOSIS

4-4. Others

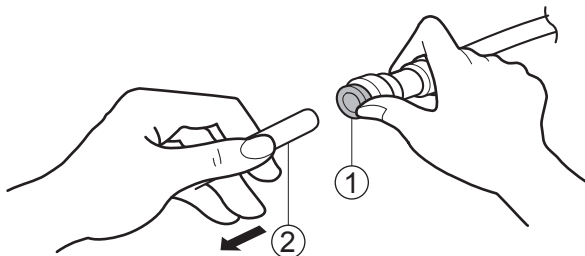
Problems	Checks and Measures
The refrigerator case is hot.	<p>■ Explain the principles of radiator.</p> <ul style="list-style-type: none"> • The radiator pipes are installed in the refrigerator case and partition plate between the refrigerator and the freezer compartment in order to prevent condensation formation. Particularly in summer or after installation of refrigerator, it may feel hot but it is normal. If there is no enough space to dissipate heat, it can be hotter due to lack of heat radiation. Please install a refrigerator in a well-ventilated place and leave a clearance between refrigerator and wall:
Small holes in a door liner	<p>■ Explain that the hole is for releasing gas.</p> <ul style="list-style-type: none"> • A small hole in the door liner is for releasing gas during insulation materials lining work. With a releasing hole, forming can be easily done.
Electric bills are too much.	<p>■ Check the use conditions.</p> <ul style="list-style-type: none"> • Too frequent door opening and hot food storing cause the compressor to operate continuously and hence increase the electric consumption and bills.
Condensation on the inside wall of the refrigerator compartment and the cover of properly vegetable drawer.	<p>■ Explain how to store foods</p> <ul style="list-style-type: none"> • Condensation forms when refrigerator is installed at damp area, door is frequently opened, and wet foods are not stored in the air tight container or wrapped. Be sure to store wet foods in the air tight container or in the wrap.
When is the power connected?	<p>■ When should the power be connected ?</p> <ul style="list-style-type: none"> • You can connect the power right after the installation. But if the refrigerator was laid flat during transportation for a long period of time and the refrigerant and compressor oils are mixed up, then this will affect badly the performance of a refrigerator. Be sure to connect the power 2~3 hours after refrigerator is installed.
<p>Door does not open properly.</p> 	<p>■ Refrigerator compartment door does not open properly.</p> <ul style="list-style-type: none"> • When the door is open, warm open air comes into the compartment and is mixed up with cool air. This mixed air shall be compressed and increase the internal pressure when door is closed. This causes the door stucked closely to the refrigerator in a moment. (If the refrigerator is used for a long time, it will then open smoothly.) <p>■ When the refrigerator compartment door is open and close, the freezer compartment door moves up and down.</p> <ul style="list-style-type: none"> • When the refrigerator compartment door is open and close, fresh air comes into the freezer compartment and moves up and down the freezer compartment door. <p>■ Door opens too easily.</p> <ul style="list-style-type: none"> • There is a magnet in the gasket rubber so that it is ok. if door is securely closed without a gap. It can be open easily if the foods in the refrigerator or freezer compartments hold the door open. <p>■ A door does not close properly.</p> <ul style="list-style-type: none"> • If the rear side of the refrigerator is raised higher than front side, door shall not be easily closed. Adjust the level of refrigerator with levelling screws.

HOW TO DISASSEMBLE AND ASSEMBLE

1. DOOR

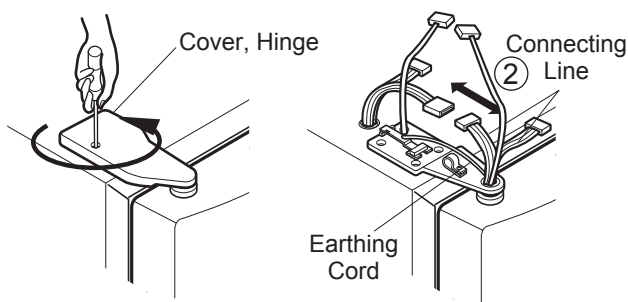
1) Remove lower cover and disconnect water supply tube in the lower part of freezer door.

- Pull a water supply tube ② forward while pressing ① part to disconnect water supply tube as shown below.

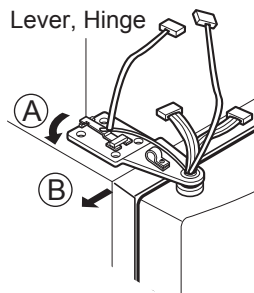


2) Remove a freezer door.

- (1) Loosen hinge cover screw of freezer door and remove cover.
Disconnect all connecting lines except earthing cord.



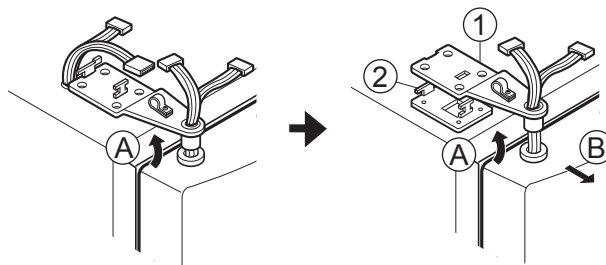
- (2) Turn hinge lever in arrow ① direction until it is loosened and take it out in arrow ② direction.



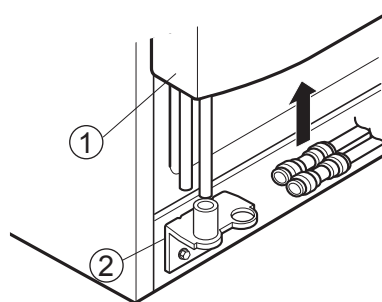
Note : • When disconnecting refrigerator door, turn hinge lever counterclockwise.

- If hinge lever or bracket hinge pin is deformed during assembling freezer and refrigerator doors, fix two screws (Tap Tite Screw, M6: Hinge, L fixing screw) in the hole of upper hinge.

- (3) Disconnect upper hinge ① from a hinge supporter ② by grasping the front part of upper hinge and lifting up (Hinge Assembly, U) in arrow direction ① and pull forward in arrow ② direction. Be careful as the door may be fallen down.



- (4) Lift up the freezer door ① in arrow direction and disconnect the door from the lower hinge ②. Don't pull a door forward.



Note : • Lift up a freezer door until a water supply tube is fully taken out.

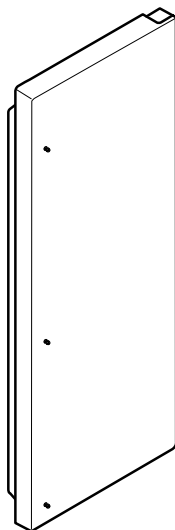
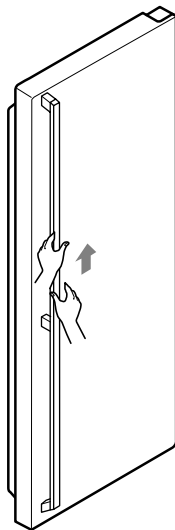
- (5) Assembly is the reverse order of disassembly

HOW TO DISASSEMBLE AND ASSEMBLE

2. HANDLE

1) Aluminum short handle Model

(1) Grasp the handle by both hands and hold it upward.



3. SHROUD, GRILLE FAN

- 1) Loosen screws after disconnecting a cap screw of a grill fan(U) with a blade screwdriver.
- 2) Disassembly of a grille fan(U) : Pull forward after opening hook at → part with a blade screwdriver.
- 3) Disconnect housing and disassembly of shroud F(U) : holding upper part and pull forward

- 4) Disassembly of a grille fan(L) : Hold upper part of a grill fan(L) and pull forward carefully
- 5) Check foam PU sticking conditions around a shroud, F(U) and F(L) during assembling. If damaged, torn or badly stuck, assemble with a new one after sealing well.

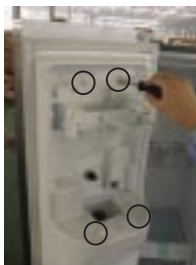
4. ICEMAKER ASSEMBLY

1. How to disassemble :

- (1) Remove the cover and ice bucket from the freezer door.



- (2) Disassemble the Motor, AC and icemaker



Loosen four screws.



Lift up the Motor, AC assembly



Pull out the Motor, AC with swing like this figure.

• **Caution** : When pulling out the Motor AC, do not damage the water injector.

- (3) Disconnect housing and loose screws



Disconnect the housing



Loosen screw of guide water



Loosen screws of icemaker and pull out the icemaker.

HOW TO DISASSEMBLE AND ASSEMBLE

4. WATER VALVE DISASSEMBLY METHOD

- 1) Turn off the power of the refrigerator (pull out the plug).
Open the FREEZER and REFRIGERATOR Door and disassemble the Lower Cover.



- 2) Lay a dry towel on the floor and get ready to spill water from the water tank.
Then press the collet to separate the tube from the connector and pour out the water until emptied.

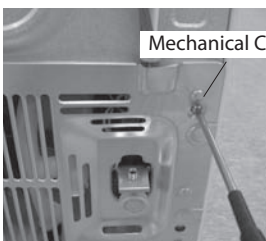
(Refer to the label attached on Front L on how to separate the tube.)



- 3) Turn off the water. Then separate the water line from the valve.



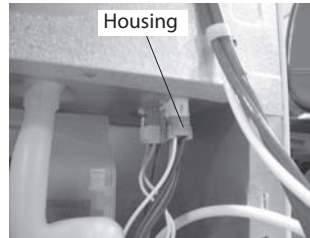
- 4) Separate the Mechanical Cover and Valve Screw.



Mechanical Cover



- 5) Separate the housing and pull out the valve.



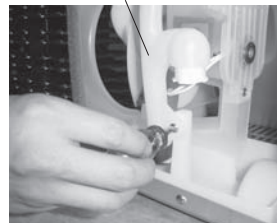
Housing



5. FAN AND FAN MOTOR DISASSEMBLY METHOD

- 1) Using a short screwdriver, loosen one SCREW in DRAIN PIPE ASSEMBLY and one connected to the MOTOR COVER.

DRAIN PIPE ASSEMBLY



MOTOR COVER



- 2) Pull and separate the FAN ASSEMBLY and MOTOR turning counterclockwise based on the MOTOR SHAFT.

FAN ASSEMBLY

MOTOR



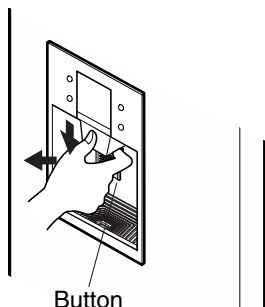
The assembly is in the reverse order of the disassembly and take special care for the following details.

1. Be careful not to bend the tube during assembly.
2. Press the WATER DISPENSER button until water pours out and check for leakage in the CONNECTOR TUBE (It differs by the water pressure but usually takes about 2 minutes until water pours out.)

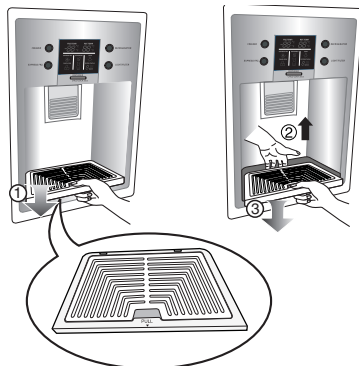
HOW TO DISASSEMBLE AND ASSEMBLE

7. DISPENSER

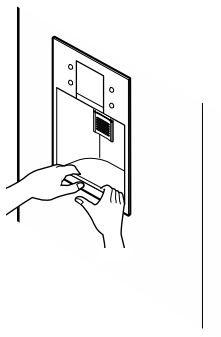
- 1) Disconnect funnel assembly by pulling down and forward.



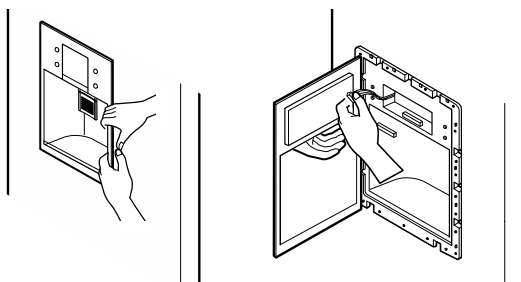
- 2) Disconnect the cover by pulling it fully to the front ① and pull up the rear end of the cover ② slightly to pull it out ③.



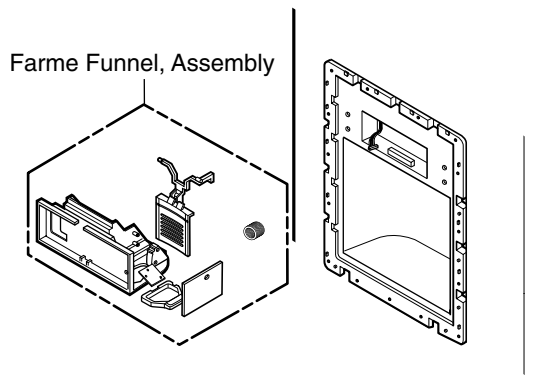
- 3) Remove a dispenser cover assembly by pulling a low side. It is attached with a hook so be pulled carefully



- 4) Remove a dispenser cover assembly by pulling a right and left side. It is attached with a hook so be pulled carefully. After separating a dispenser cover, you have to disconnect its housing

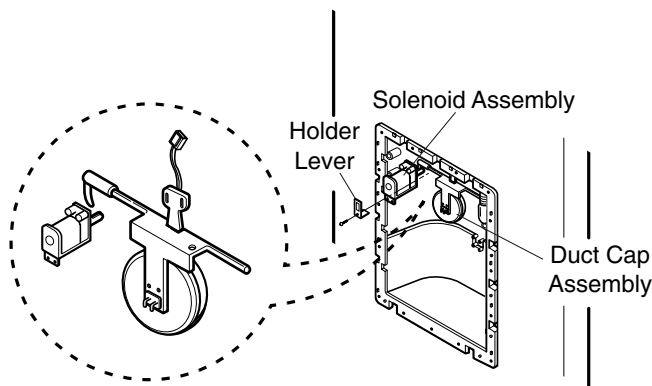


- 5) Loosen fixed screws with a screwdriver and pull the funnel assembly to disconnect.

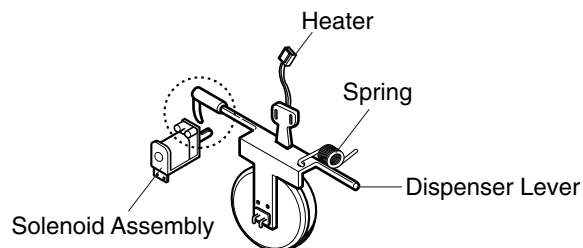


※ You can change LED Lamp in this disassemble state

- 6) The duct cap assembly can be disconnected if the hold lever connecting screw is loosened with a screwdriver.

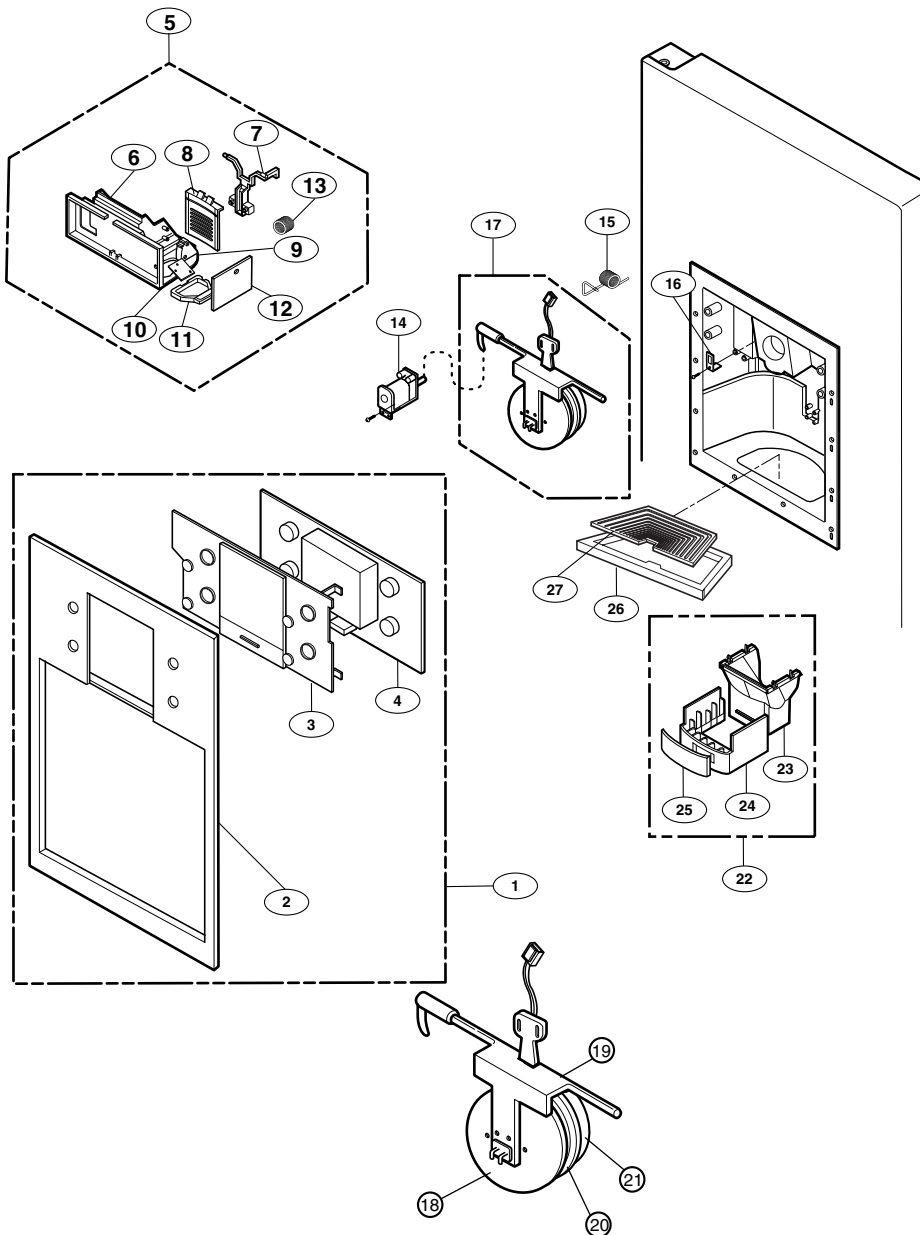


- 7) To install the duct cap assembly, insert one end of the spring into the right hole of the dispenser lever and insert the other end into the right hole in the top part of the dispenser. Then attach the holder at the solenoid switch.



HOW TO DISASSEMBLE AND ASSEMBLE

8) Dispenser Related Parts



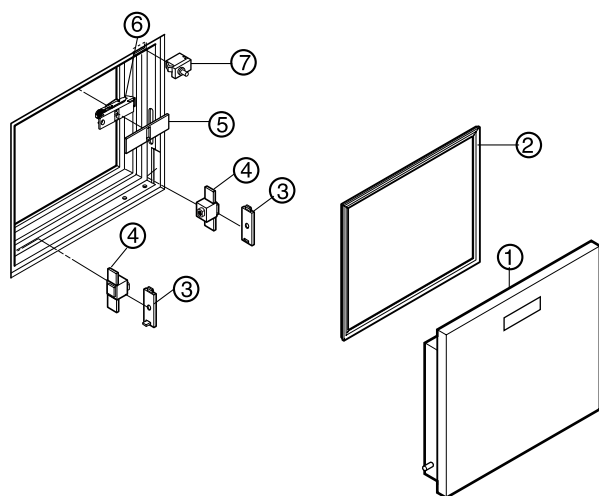
1	COVER ASSEMBLY, DISPENSER
2	COVER, DISPENSER
3	DECO COVER, DISPLAY
4	PWB(PCB) ASSEMBLY, DISPLAY
5	FRAME FUNNEL, ASSEMBLY
6	FRAME, FUNNEL
7	LEVER, DISPENSER
8	BUTTON, LEVER
9	SWITCH, MICRO
10	PCB ASSEMBLY, DISPLAY
11	SUPPORTER, HOLDER
12	SHEET DUCT
13	SPRING, LEVER
14	SOLENOID, ASSEMBLY
15	SPRING
16	LEVER, HOLDER
17	CAP ASSEMBLY, DUCT
18	CAP, DUCT
19	DISPENSER, LEVER
20	FOAM, NEW
21	RUBBER, CAP
22	FUNNEL, ASSEMBLY
23	FUNNEL
24	DECO, COVER
25	DECO, PANEL
26	DECO, DRAIN
27	DECO, DRAIN(COVER)

< 17 Cap Assembly, Duct Detailed Drawings >

HOW TO DISASSEMBLE AND ASSEMBLE

8. HOME BAR

8-1. Home Bar related parts



1 DOOR ASSEMBLY, H/BAR	5 COVER, LEVER
2 GASKET, H/BAR	6 HOLDER ASSEMBLY, BRACKET
3 COVER, FRAME	7 SWITCH, PUSH BUTTON
4 HINGE ASSEMBLY, H/BAR	

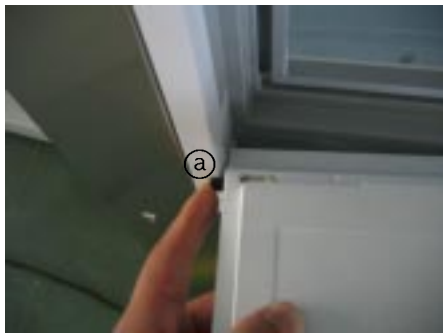
8-2. Home Bar parts disassembly and assembly

1) Disassmble H/Bar.



Using a flat driver or a pick tool, separate a home bar

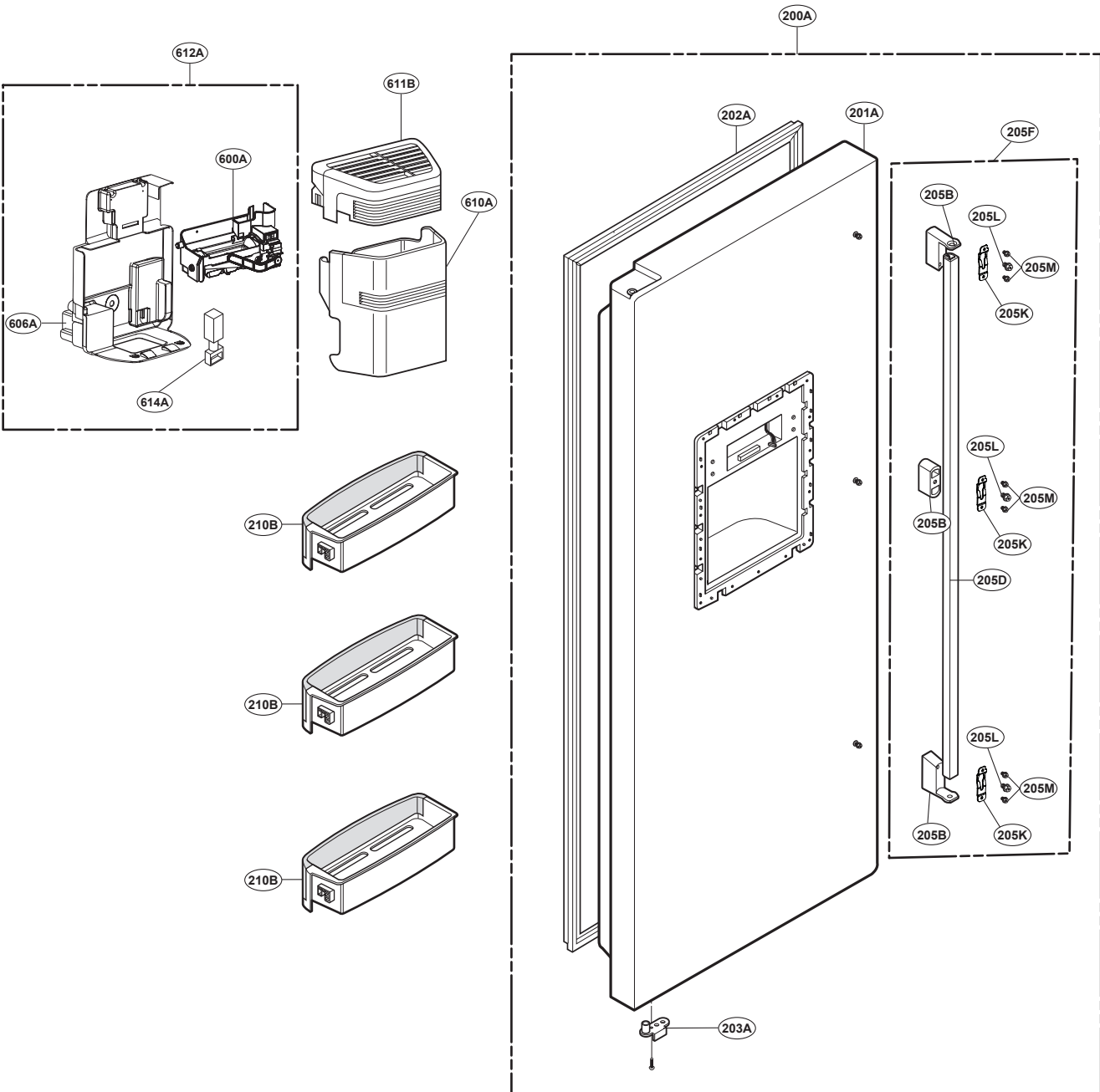
2) Assembly H/Bar.



First, you insert a right side, and push a home bar hinge on left side(a).

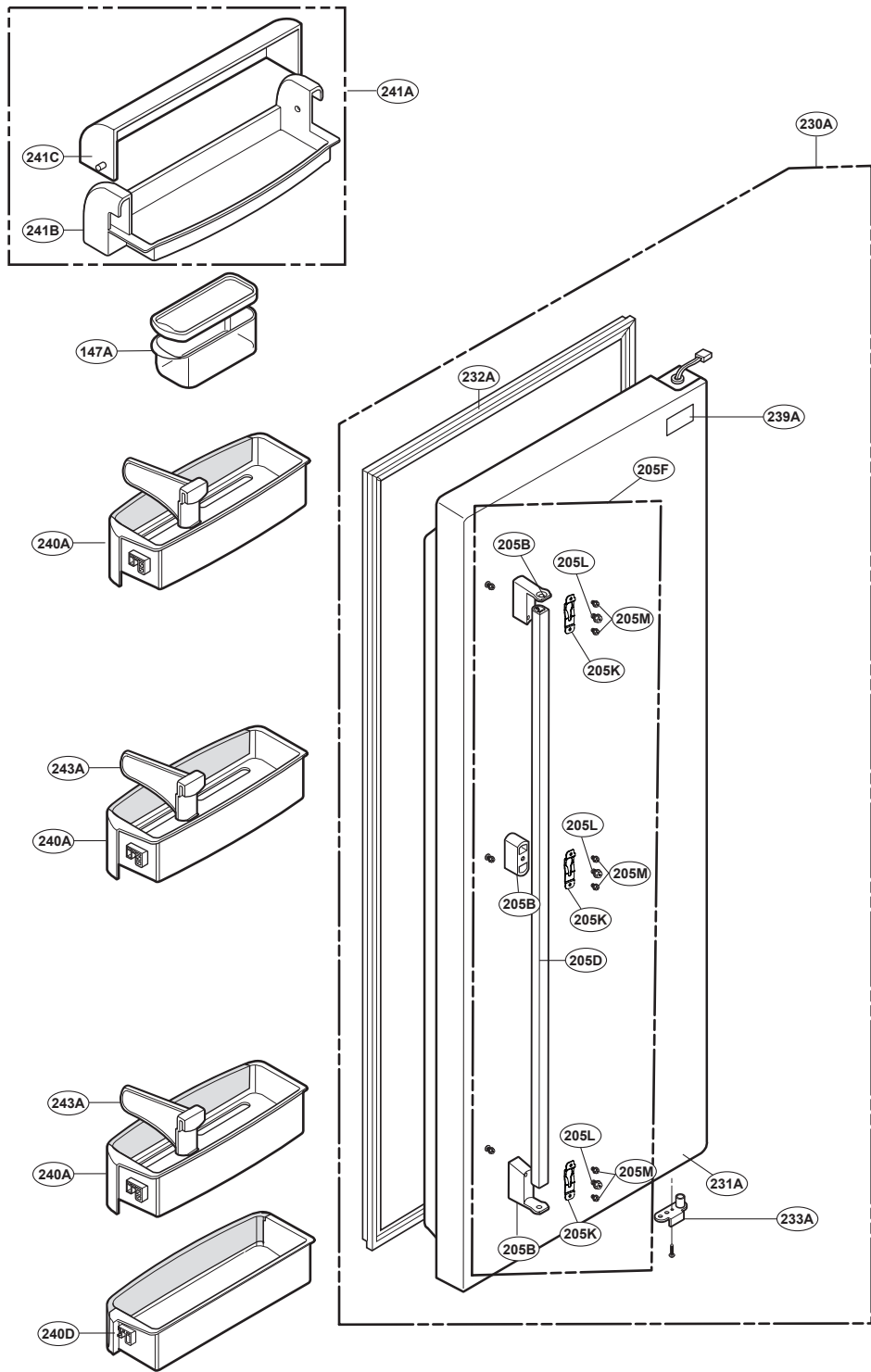
EXPLODED VIEW

FREEZER DOOR PART : GW



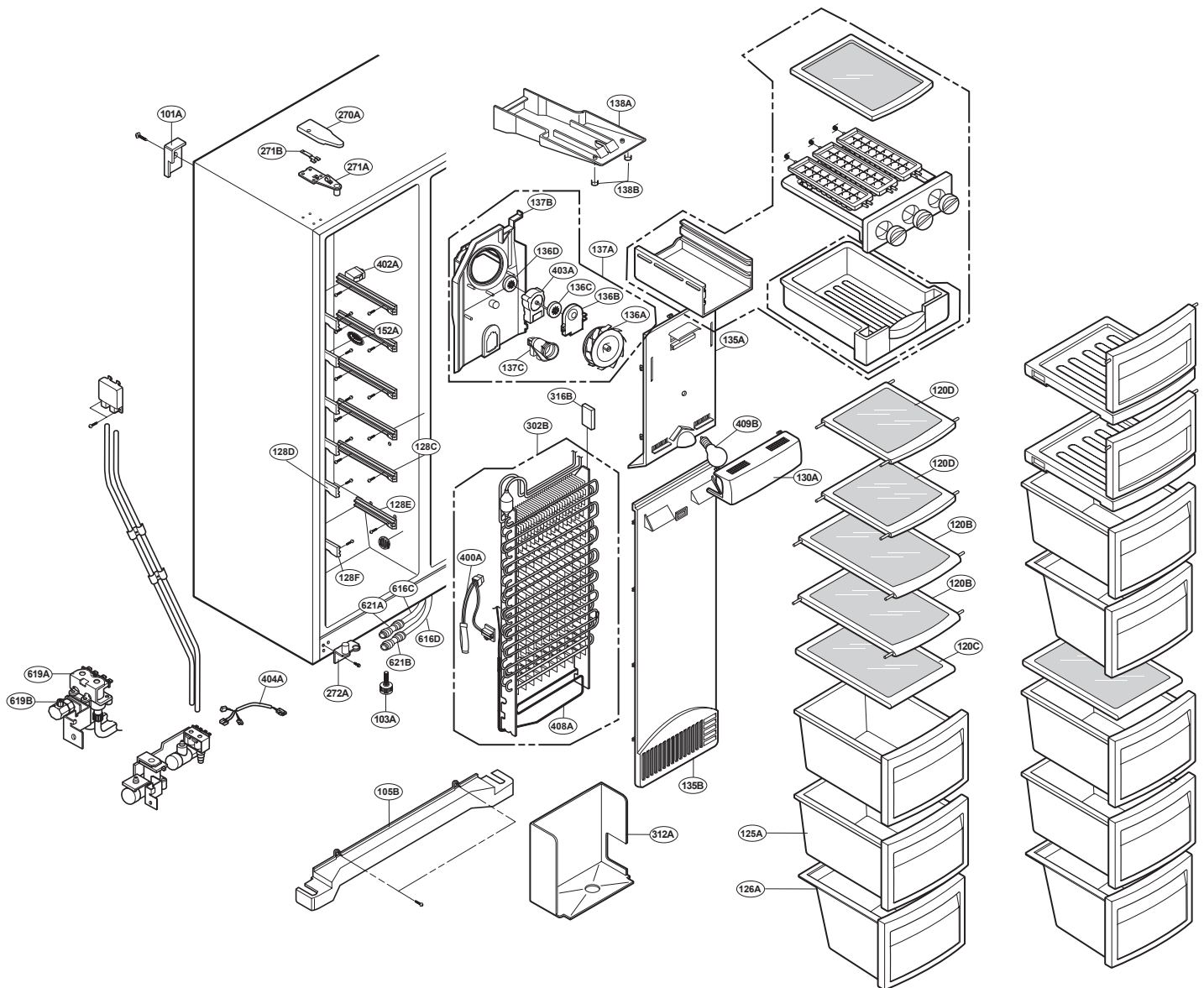
EXPLODED VIEW

REFRIGERATOR DOOR PART

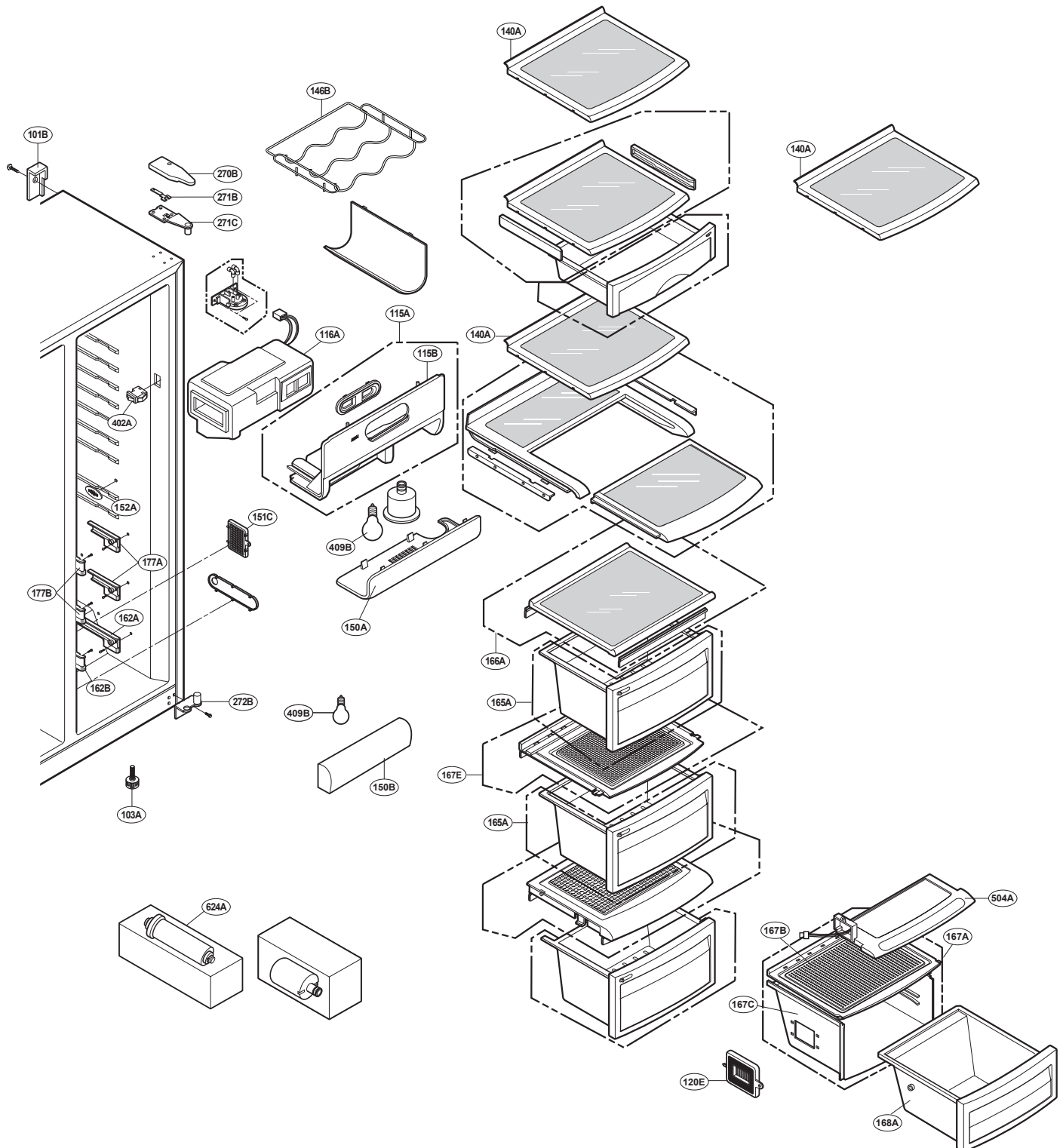


EXPLODED VIEW

FREEZER COMPARTMENT

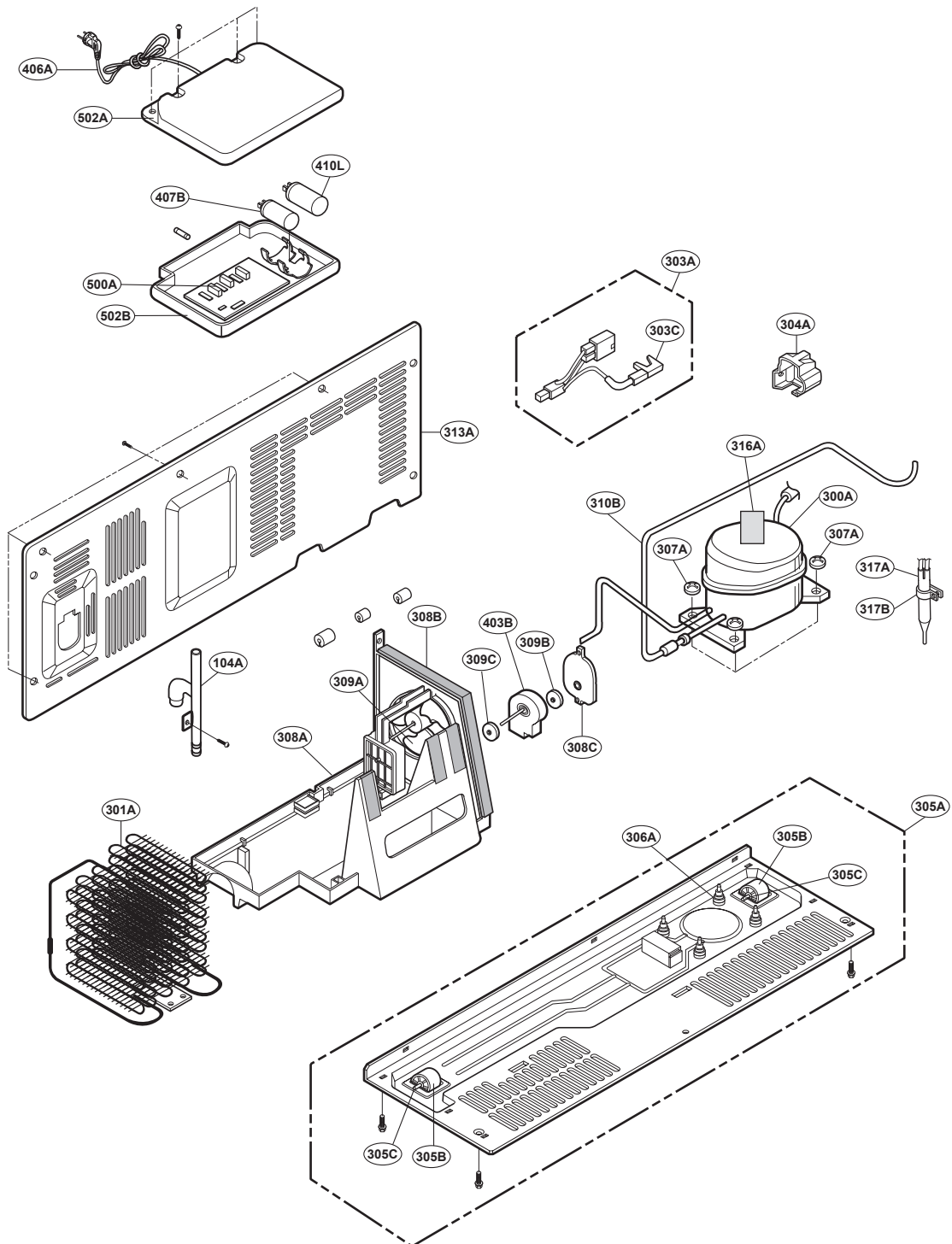


REFRIGERATOR COMPARTMENT



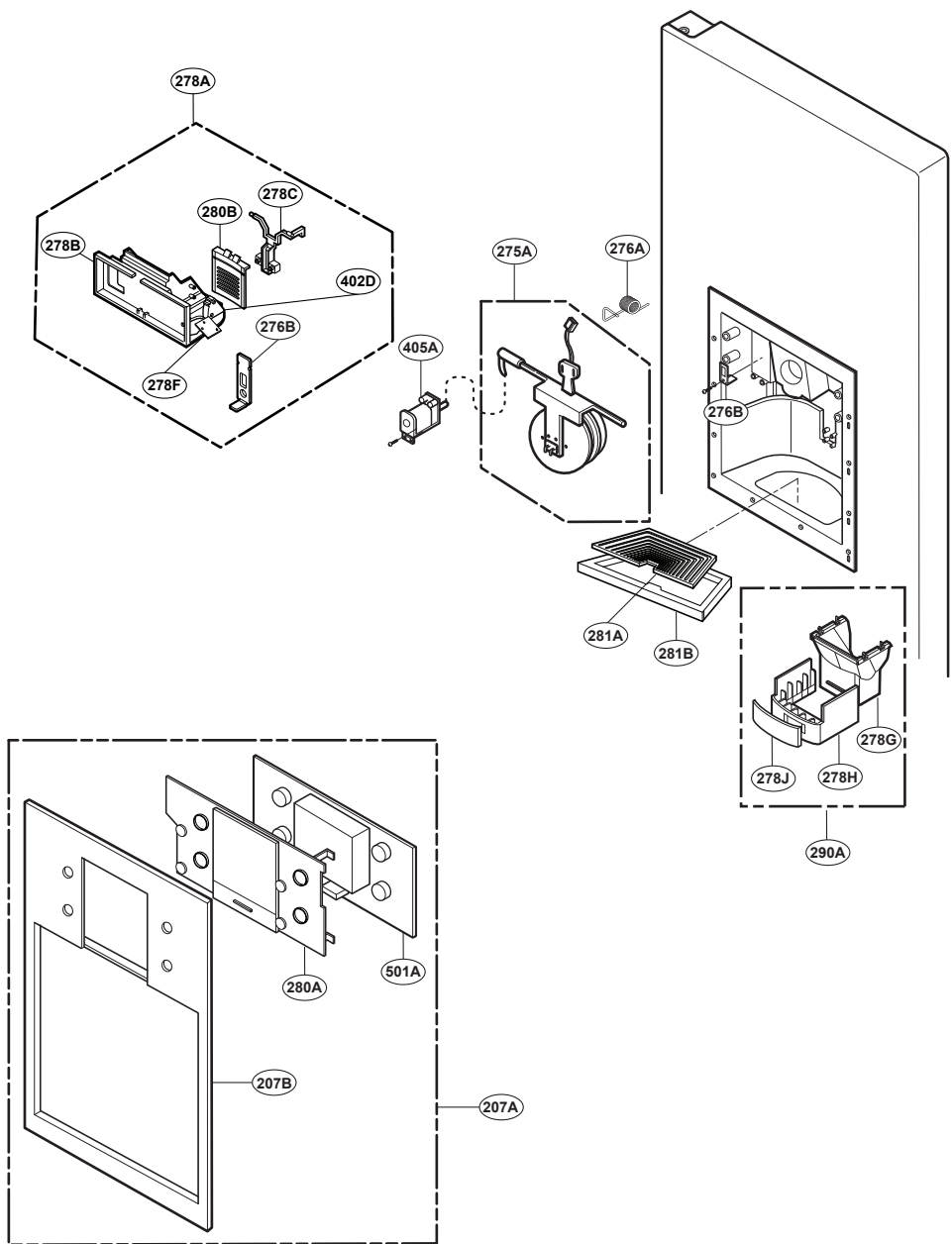
EXPLODED VIEW

MACHINE COMPARTMENT



EXPLODED VIEW

DISPENSER PART





P/No. MFL38540610

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